ESSENTIAL DRUGS

Practical guide intended for physicians, pharmacists, nurses and medical auxiliaries

2016 edition



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Preface

The 1978 Alma Ata Conference on primary health care recognized that essential drugs are vital for preventing and treating illnesses which affect millions of people throughout the world. Essential drugs save lives and improve health.

In 1981, the World Health Organization established the Action Programme on Essential Drugs to support countries to implementing national drug policies and to work towards rational use of drugs. This work was broadened in 1998 when WHO created the department of Essential Drugs and Other Medicines (EDM), combining the responsabilities of the former DAP with WHO's global efforts to promote quality, safety, efficacy, and accurate information for all medicines.

EDM works with countries, international agencies, NGOs like Médecins Sans Frontières, and other organizations to ensure that people everywhere have access to the essential drugs they need at a price which is affordable; that the drugs are safe, effective, and of good quality; and that they are prescribed and used rationally.

Appropriate tools are critical to the effective implementation of essential drugs policies. This practical handbook, based on Médecins Sans Frontières' field experience, is one of the tools which we strongly recommend.

Designed to give practical, concise infomation to physicians, pharmacists and nurses, this "Essential drugs - practical guidelines" is an important contribution from Médecins Sans Frontières to improve the rational use of drugs, which will be a continuing challenge in the coming years.

Dr Jonathan D. Quick
Director,
Essential Drugs and Other medicines
World Health Organization

Foreword

This guide is not a dictionary of pharmacological agents. It is a practical manual intended for health professionals, physicians, pharmacists, nurses and health auxiliaries involved in curative care and drug management.

We have tried to provide simple, practical solutions to the questions and problems faced by medical staff, using the accumulated field experience of Médecins Sans Frontières, the recommendations of reference organizations such as the World Health Organization (WHO) and specialized documentation in each field.

This manual is not only used by Médecins Sans Frontières, but also in a wide range of other programmes and contexts.

The list of drugs in this edition has been revised: in accordance to the most recent WHO list of essential medicines, certain drugs have been added, others have been removed.

Among the entries in this guide, some are not listed in the WHO list of essential medicines. However these drugs are in the same pharmaceutical class for which the WHO has named only one "*example of a therapeutic group*" preceded by a square symbol to indicate that various drugs can be used as alternatives.

Certain medicines, which are not on the WHO list, are still frequently administered although their use is not recommended. These medicines have been included in this guide by entries marked by a grey diagonal line.

The entries are classified according to the route of administration and in alphabetical order. This classification reflects the drug management system proposed in this manual (see Organization and management of a pharmacy).

Only the main contra-indications, adverse effects, precautions and drug interactions of each drug have been indicated in this manual. For further detailed information refer to specialised literature. Concerning antiretrovirals, the interactions are too many to be listed: it is therefore essential to refer to specialised literature.

This manual is a collective effort by medical professionals from many disciplines, all with field experience.

Despite all efforts, it is possible that certain errors may have been overlooked in this manual. Please inform the authors of any errors detected. It is important to remember, that if in doubt, it is the responsibility of the prescribing medical professional to ensure that the doses indicated in this manual conform to the manufacturer's specifications.

The authors would be grateful for any comments or criticisms to ensure that this manual continues to evolve and remains adapted to the reality of the field.

Comments should be addressed to:

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This manual is also available on the internet at www.refbooks.msf.org. As treatment protocols are constantly changing, medical staff are encouraged to check this website for updates of this edition.

Use of the guide

Nomenclature of drugs

The International Non-proprietary Names (INN) of drugs is used in this manual.

Dosage

Prescription tables showing average dosage in drug units (tablets, ampoules etc.) according to weight or age of patients are included for the most commonly used drugs.

Dosage for children are expressed in milligrams per kilogram per day (mg/kg/day) for most drugs. For certain symptomatic drugs, dosage is expressed in milligrams per kilogram per dose (mg/kg/dose). For certain antiretrovirals, dosage is expressed in milligrams per square meter (mg/m^2).

Dosage for adults is expressed in grams or milligrams per day for most drugs. For certain drugs requiring a more precise dosage, doses are expressed in mg/kg/day. In malnourished patients, prescriptions should always be adapted to the patient's weight.

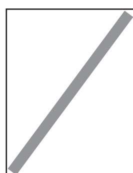
Symbols

Prescription under medical supervision

This box indicates potentially toxic drugs, administered under medical prescription only in many European countries (e.g. Belgium, France, Spain, United Kingdom).



This symbol is used to draw attention to drugs whose toxic potential is greater, or for which experience has shown they are frequently misused.



Drugs marked with a grey diagonal line are either potentially dangerous and forbidden in certain countries, or obsolete or ineffective.
These drugs are still widely used, attention is therefore drawn to the risk of their prescription.

Practical recommendations for drug storage:

 drug very sensitive to light

 drug very sensitive to humidity

If no temperature for storage is recommended, this indicates that no information was found in medical literature.

Abbreviations

Units

kg = kilogram
g = gram
mg = milligram
(1 g = 1000 mg)
µg = microgram
m^2 = square meter
UI = international unit
M = million
mEq = milliequivalent
mmol = millimole
ml = millilitre
(1 cc = 1 ml)
tsp = teaspoon (= 5 ml)
ssp = soupspoon (= 15 ml)

Administration route

IM = intramuscular
IV = intravenous
SC = subcutaneous

Presentation

tab = tablet
cap = capsule
vl = vial
amp = ampoule
susp = suspension

Others

v/v = volume in volume

D = day
(e.g. D1 = first day)

Summary

Part one

Part two

Organisation and management of a pharmacy

Drug quality and storage

Prescription, cost, compliance

Antiseptics and disinfectants

WHO model list of essential medicines

Main references

Oral drugs

Abacavir = ABC
Acetaminophen
Acetylsalicylic acid = ASA
Aciclovir
Albendazole
Albuterol
Albuterol aerosol
Albuterol nebuliser solution
Aluminium hydroxide
Amitriptyline
Amodiaquine = AQ
Amoxicillin
Amoxicillin/Clavulanic acid
Artemether/Lumefantrine
Artesunate = AS
Artesunate/Amodiaquine = AS/AQ
Artesunate + Sulfadoxine/Pyrimethamine = AS + SP
Ascorbic acid
Aspirin
Atenolol
Azithromycin
AZT/3TC
AZT/3TC/NVP
Beclometasone aerosol
Biperiden
Bisacodyl
Butylscopolamine
Cabergoline
Calcium folinate
Carbamazepine
Cefalexin
Cefixime
Charcoal (activated)
Chloramphenicol
Chloroquine
Chlorphenamine = Chlorpheniramine
Chlorpromazine
Cimetidine
Ciprofloxacin
Clindamycin
Clomipramine
Cloxacillin
Co-amoxiclav
Coartemether
Codeine
Colecalciferol
Cotrimoxazole
Dapsone
Desogestrel
Diazepam
Diethylcarbamazine
Digoxin
Dihydroartemisinin/Piperaquine = DHA/PPQ
Dipyrone
Doxycycline
Efavirenz = EFV = EFZ
Enalapril
Ergocalciferol
Erythromycin
Ethambutol = E
Ethinylestradiol/Levonorgestrel
Ferrous salts
Ferrous salts/Folic acid
Fluconazole
Flucytosine
Fluoxetine
Folic acid
Folinic acid
Fosfomycin trometamol
Furosemide
Glibenclamide
Glyceryl trinitrate
Griseofulvin
Haloperidol
Hydrochlorothiazide
Hyoscine butylbromide
Ibuprofen
Iodized oil
Isoniazid = H
Isosorbide dinitrate
Itraconazole
Ivermectin
Labetalol
Lactulose
Lamivudine = 3TC
Levodopa/Carbidopa
Levonorgestrel
Levonorgestrel (emergency contraception)

Loperamide
Lopinavir/Ritonavir = LPV/r
Mebendazole
Mefloquine = MQ
Metamizole
Methyldopa
Metoclopramide
Metronidazole
Miconazole
Mifepristone = RU486
Misoprostol
Morphine immediate-release (MIR)
Morphine sustained-release (MSR)
Multivitamins
Nevirapine = NVP
Niclosamide
Nicotinamide
Nifedipine
Nitrofurantoin
Nitroglycerin
Noramidopyrine
Nystatin
Omeprazole
Oral rehydration salts = ORS
Paracetamol
Paroxetine
Penicillin V
Phenobarbital
Phenoxymethylpenicillin
Phenytoin
Potassium chloride immediate-release
Potassium chloride sustained-release
Praziquantel
Prednisolone and Prednisone
Promethazine
Pyrantel
Pyrazinamide = Z
Pyridoxine
Pyrimethamine
Quinine
ReSoMal
Retinol
Rifampicin = R
Risperidone
Ritonavir = RTV
Salbutamol
Salbutamol aerosol
Salbutamol nebuliser solution
Sodium valproate
Spironolactone
Sulfadiazine
Sulfadoxine/Pyrimethamine = SP
Sulfamethoxazole (SMX)/Trimethoprim (TMP)
Thiamine
Tinidazole
Tramadol
Tranexamic acid
Triclabendazole
Trinitrin
Valproic acid
Vitamin A
Vitamin B complex
Vitamin B1
Vitamin B3
Vitamin B6
Vitamin B9
Vitamin C
Vitamin D2
Vitamin D3
Vitamin PP
Zidovudine = AZT
Zidovudine/Lamivudine
Zidovudine/Lamivudine/Nevirapine
Zinc sulfate

ABACAVIR = ABC

Prescription under medical supervision

Therapeutic action

– Antiretroviral, HIV-1 and HIV-2 nucleoside reverse transcriptase inhibitor

Indications

– HIV-1 or HIV-2 infection, in combination with other antiretroviral drugs

Presentation

– 60 mg dispersible tablet
– 300 mg tablet

Dosage

– Child less than 25 kg: 16 mg/kg/day in 2 divided doses, without exceeding 600 mg/day
– Child ≥ 25 kg and adult: 600 mg/day in 2 divided doses

Duration

– Depending on the efficacy and tolerance of abacavir.

Contra-indications, adverse effects, precautions

– Do not administer to patients with severe hepatic impairment or history of severe intolerance to abacavir that led to discontinuation of treatment.
– May cause:
  • hypersensitivity reactions: skin rash, gastrointestinal disturbances (nausea, vomiting, diarrhoea, abdominal pain), cough, dyspnoea, malaise, headache, lethargy, oedema, lymphadenopathy, hypotension, myalgia, arthralgia, renal impairment;
  • lactic acidosis and hepatic disorders.
  In all these cases, stop taking abacavir immediately and permanently.
– *Pregnancy: avoid, except if there is no therapeutic alternative.*

Remarks

– Tablets are not scored. When half a tablet is required, use a cutter or a tablet cutter to cut the tablet into two equal parts.
– Also comes in fixed-dose combination tablets containing abacavir-lamivudine and abacavir-zidovudine-lamivudine.
– Also comes in 20 mg/ml oral solution.
– *Storage: below 25°C*

ACETYLSALICYLIC acid = ASPIRIN = ASA

Prescription under medical supervision

Therapeutic action

– Analgesic, antipyretic, non steroidal anti-inflammatory (NSAID)

Indications

– Mild pain
– Fever
– Rheumatic diseases (except gout)

Presentation

– 300 mg and 500 mg tablets

Dosage

– *Pain and fever*
  Adult: 1 to 3 g/day in 3 or 4 divided doses
– *Rheumatic diseases*
  Child > 20 kg: 50 to 100 mg/kg/day in 4 divided doses
  Adult: 3 to 6 g/day in 4 divided doses

Duration

– *Pain and fever*: 1 to 3 days; rheumatic diseases: according to clinical response.

Contra-indications, adverse effects, precautions

– Do not administer to patients with allergy to aspirin and NSAID, peptic ulcer, coagulation disorders, haemorrhage; severe renal, hepatic or cardiac impairment.
– Do not administer to children for pain or fever (use paracetamol).
– Administer with caution to elderly patients or patients with asthma.
– Do not exceed indicated doses, particularly in children and elderly patients. Intoxications are severe, possibly fatal.
– May cause:
  • allergic reactions, epigastric pain, peptic ulcer, haemorrhage;
  • dizziness, tinnitus (early signs of overdose).
  For all cases above, stop aspirin and use paracetamol.
– Do not combine with methotrexate, anticoagulants and NSAID.
– Monitor combination with insulin (increased hypoglycaemia) and corticosteroids.
– <u>*Pregnancy*</u>: ***CONTRA-INDICATED*** *(use paracetamol)*
– <u>*Breast-feeding*</u>: *avoid (use paracetamol)*

Remarks

– Take during meals, preferably with a lot of water.
– For the treatment of moderate pain, it is recommended to combine aspirin with codeine or tramadol.
– Aspirin may be administered for its antiplatelet effects in secondary prevention of atherothrombosis, at a dose of 75 to 300 mg daily.
– <u>*Storage*</u>: *below 25°C –*
  Do not use if tablets have a strong smell of vinegar. A slight vinegar smell is always present.

ACICLOVIR

Prescription under medical supervision

Therapeutic action

– Antiviral active against herpes simplex virus and varicella zoster virus

Indications

– Treatment of recurrent or extensive oral and oesophageal herpes in immunocompromised patients
– Treatment of herpetic kerato-uveitis
– Treatment of genital herpes
– Secondary prophylaxis of herpes in patients with frequent and/or severe recurrences
– Treatment of severe forms of zoster: necrotic or extensive forms, facial or ophthalmic zoster

Presentation

– 200 mg and 800 mg tablets

Also comes in 40 mg/ml oral suspension.

Dosage and duration

– *Treatment of recurrent or extensive oral and oesophageal herpes in immunocompromised patients, treatment of herpetic kerato-uveitis*
  Child under 2 years: 200 mg 5 times per day for 7 days
  Child over 2 years and adult: 400 mg 5 times per day for 7 days
– *Treatment of genital herpes*
  Child over 2 years and adult: 400 mg 3 times per day for 7 days; in immunocompromised patients, continue treatment until clinical resolution
– *Secondary prophylaxis of herpes in patients with frequent and/or severe recurrences*
  Child under 2 years: 200 mg 2 times per day
  Child over 2 years and adult: 400 mg 2 times per day
– *Treatment of severe forms of zoster*
  Adult: 800 mg 5 times per day for 7 days

Contra-indications, adverse effects, precautions

– Do not administer to patients with hypersensitivity to aciclovir.
– May cause: headache, skin rash, allergic reactions, gastrointestinal disturbances, raised transaminases, neurologic disorders in patients with renal impairment and elderly patients; rarely, haematological disorders.
– Reduce dosage in patients with renal impairment.
– Drink a lot of liquid during treatment.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– For the treatment of herpes simplex, aciclovir should be started as soon as possible (within 96 hours) after the appearance of lesions to reduce severity and duration of infection.
– For the treatment of herpes zoster, aciclovir should be start preferably within 72 hours after the appearance of lesions. Aciclovir administration does not reduce the likelihood of developing zoster-associated pain but reduces the overall duration of this pain.
– *Storage: below 25°C –*

ALBENDAZOLE

Prescription under medical supervision

Therapeutic action

- Anthelminthic

Indications

- Ascariasis (*Ascaris lumbricoides*), enterobiasis (*Enterobius vermicularis*), hookworm infections (*Ancylostoma duodenale*, *Necator americanus*)
- Trichuriasis (Trichuris trichiura), strongyloidiasis (*Strongyloides stercoralis*)
- Trichinellosis (*Trichinella spp*)

Presentation

- 400 mg tablet

Dosage and duration

- *Ascariasis, enterobiasis, hookworm infections*
  Child over 6 months and adult: 400 mg as a single dose
  Child over 6 months but under 10 kg: 200 mg as a single dose
  In the event of enterobiasis, a second dose may be given after 2 to 4 weeks.
- *Trichuriasis, strongyloidiasis*
  Child over 6 months and adult: 400 mg once daily for 3 days
  Child over 6 months but under 10 kg: 200 mg once daily for 3 days
- *Trichinellosis*
  Child over 2 years: 10 mg/kg/day in 2 divided doses for 10 to 15 days
  Adult: 800 mg/day in 2 divided doses for 10 to 15 days

Contra-indications, adverse effects, precautions

- Do not administer to children under 6 months.
- Do not administer to patients with ocular cysticercosis.
- May cause:
  - gastrointestinal disturbances, headache, dizziness;
  - neurological disorders (headache, seizures) in patients with undiagnosed neurocysticercosis.
- *Pregnancy: avoid during the first trimester*
- *Breast-feeding: no contra-indication*

Remarks

- Tablets are to be chewed or crushed: follow manufacturer's recommendations.
- In the treatment of strongyloidiasis, ivermectin is more effective than albendazole.
- Albendazole is also used in the treatment of cutaneous larva migrans (*Ancylostoma braziliense* and *caninum*), larval cestode infections (hydatid disease, certain forms of neurocysticercosis) and in mass treatment for lymphatic filariasis (check national recommendations).
- *Storage*: –

ALUMINIUM HYDROXIDE

Therapeutic action
– Antacid

Indications
– Stomach pain associated with gastritis and peptic ulcer

Presentation
– 500 mg tablet

There are numerous preparations of aluminium and/or magnesium hydroxide and different dosages.

Dosage
– Child over 5 years: rarely indicated. When necessary: half a tablet 3 times/day
– Adult: 3 to 6 tablets/day after meals or 1 tablet during painful attacks

Duration
– According to clinical response

Contra-indications, adverse effects, precautions
– May cause: constipation (except when tablets contain magnesium salts or magnesium hydroxide).
– Decreases intestinal absorption of many drugs such as tetracycline, iron salts, isoniazid, ethambutol, chloroquine, atenolol, digoxin, fluoroquinolones, corticosteroids, indometacin, ketoconazole, thyroxine, etc. Do not administer simultaneously with these drugs, administer 2 hours apart.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks
– Chew tablets.
– *Storage: below 25°C*

AMITRIPTYLINE



Prescription under medical supervision

Therapeutic action

– Tricyclic antidepressant with anxiolytic and sedative properties

Indications

– Neuropathic pain, often in combination with carbamazepine
– Major depression, especially when a sedative effect is required

Presentation

– 25 mg tablet

Dosage

– Adult:
  • *Neuropathic pain*: initial dose of 25 mg once daily at bedtime for one week. Increase to 50 mg once daily the following week, then 75 mg once daily at bedtime as of the third week (max. 150 mg/day).
  • *Depression*: the usual dose is 75 to 150 mg once daily (depending on efficacy and tolerance) at bedtime. The dose is also increased progressively but more rapidly, over 8 to 10 days.
– Reduce the dose by half in elderly patients and in patients with hepatic or renal impairment.

Duration

– *Neuropathic pain*: several months (3 to 6) after pain relief is obtained, then attempt to stop treatment.
– *Depression*: minimum 6 months. The treatment should be discontinued gradually (dose tapered over 4 weeks). If signs of relapse occur, increase the dose.

Contra-indications, adverse effects, precautions

– Do not administer to patients with recent myocardial infarction, arrhythmia, closed-angle glaucoma, prostate disorders.
– Administer with caution and carefully monitor use in patients > 60 years and in patients with epilepsy, chronic constipation, renal or hepatic impairment, history of bipolar disorders.
– May cause:
  • drowsiness (caution when driving/operating machinery), orthostatic hypotension, sexual dysfunction;
  • anticholinergic effects: dry mouth, blurred vision, constipation, tachycardia, disorders of micturition. These adverse effects are transitory or disappear with dose reduction. Treatment should be discontinued in the event of severe reactions (mental confusion, urinary retention, cardiac rhythm disorders);
  • psychic disorders: exacerbation of anxiety, possibility of a suicide attempt at the beginning of therapy, manic episode during treatment.
– Do not combine with another antidepressant.
– Monitor combination with CNS depressants (opioid analgesics, sedatives, H1 antihistamines, etc.), drugs known to have anticholinergic effects (atropine, chlorpromazine, promethazine, etc.), drugs which lower the seizure threshold (antispychotics, mefloquine, tramadol, etc.), lithium and other serotonergics.
– Avoid alcohol during treatment.
– *<u>Pregnancy</u>: re-evaluate whether the treatment is still necessary; if it is continued, decrease the dose at the end of pregnancy to avoid gastrointestinal and neurological adverse effects in the newborn infant.*
– *<u>Breast-feeding</u>: monitor the child for excessive somnolence.*

Remarks

– Sedative effect occurs following initial doses, analgesic effect is delayed for 7 to 10 days. For depression, it is necessary to wait 3 weeks before assessing therapeutic efficacy. This must be explained to the patient.
– *<u>Storage</u>: below 25°C*

AMODIAQUINE = AQ

Prescription under medical supervision

Do not administer the combination artesunate-amodiaquine as separate tablets (i.e. artesunate tablets + amodiaquine tablets). Use coformulated tablets or, if not available, co-blisters.

Therapeutic action

– Antimalarial

Indications

– Treatment of uncomplicated falciparum malaria, in combination with artesunate
– Completion treatment following parenteral therapy for severe falciparum malaria, in combination with artesunate

Presentation

– 200 mg amodiaquine hydrochloride tablet, containing 153 mg amodiaquine base

Dosage and duration

– Child and adult: 10 mg base/kg once daily for 3 days

Contra-indications, adverse effects, precautions

– Do not administer in the event of previous severe adverse reaction to treatment with amodiaquine (e.g. hypersensitivity reaction, hepatitis, leucopenia, agranulocytosis).
– Do not administer to patients taking efavirenz.
– May cause: gastrointestinal disturbances, pruritus.
– *Pregnancy: no contra-indication during the 2^{nd} and 3^{rd} trimester. Safety in the first trimester has not been definitely established. However, given the risks associated with malaria, the combination artesunate-amodiaquine may be used during the first trimester if it is the only effective treatment available.*
– *Breast-feeding: no contra-indication*

Remarks

– Amodiaquine should not be used for prophylaxis.
– *Storage: below 25°C –*

AMOXICILLIN

Prescription under medical supervision

Therapeutic action

– Penicillin antibacterial

Indications

– Acute otitis media, streptococcal tonsillitis, sinusitis, bronchitis, pneumonia
– Infection due to *Helicobacter pylori* (in combination with omeprazole and metronidazole or tinidazole), leptospirosis, no severe cutaneous anthrax
– Typhoid fever (if ciprofloxacin is contra-indicated and if the strain is susceptible)
– Completion treatment following parenteral therapy with penicillins or cephalosporins

Presentation

– 250 mg and 500 mg tablets or capsules
– 250 mg dispersible scored tablet, for paediatric use
– 125 mg/5 ml powder for oral suspension, to be reconstituted with filtered water

Dosage

– *Usual dosage (e.g. leptospirosis, tonsillitis, infection due to H. pylori)*
Child: 50 mg/kg/day in 2 divided doses
Adult: 2 g/day in 2 divided doses

Age	Weight	125 mg/5 ml susp.	250 mg tablet	500 mg tablet
< 3 months	< 6 kg	1 tsp x 2	½ tab x 2	–
3 to < 24 months	6 to < 12 kg	2 tsp x 2	1 tab x 2	–
2 to < 8 years	12 to < 25 kg	4 tsp x 2	2 tab x 2	1 tab x 2
≥ 8 years and adult	≥ 25 kg	–	4 tab x 2	2 tab x 2

– *Severe infections (e.g. typhoid) or suspicion of resistant pneumococci (e.g. pneumonia, otitis)*
Child: 80 to 100 mg/kg/day in 3 divided doses (max. 3 g)
Adult: 3 g/day in 3 divided doses

Age	Weight	125 mg/5 ml susp.	250 mg tablet	500 mg tablet
< 3 months	< 6 kg	1 tsp x 3	½ tab x 3	–
3 to < 24 months	6 to < 12 kg	2 tsp x 3	1 tab x 3	–
2 to < 8 years	12 to < 25 kg	4 tsp x 3	2 tab x 3	1 tab x 3
≥ 8 years and adult	≥ 25 kg	–	4 tab x 3	2 tab x 3

Duration

– *Otitis media*: 5 days; *tonsillitis*: 6 days; *leptospirosis*: 7 days; *pneumonia, sinusitis, cutaneous anthrax*: 7 to 10 days; *H. pylori infection*: 10 to 14 days; *typhoid fever*: 14 days

Contra-indications, adverse effects, precautions

– Do not administer to penicillin-allergic patients or patients with mononucleosis.
– Administer with caution to patients allergic to cephalosporins (cross-sensitivity may occur).
– May cause: gastrointestinal disturbances, allergic reactions, sometimes severe. In the event of allergic reaction, stop treatment immediately.
– Reduce dosage in patients with severe renal impairment.
– Do not combine with methotrexate.
– *Pregnancy and breast-feeding: no contra-indication*

Remarks

– *Storage: below 25°C* – –
For the oral suspension (powder or reconstituted suspension): follow manufacturer's instructions.

AMOXICILLIN/CLAVULANIC acid = CO-AMOXICLAV

Prescription under medical supervision

Therapeutic action

– Combination of two antibacterials. The addition of clavulanic acid to amoxicillin extends its spectrum of activity to cover beta-lactamase producing Gram-positive and Gram-negative organisms, including some Gram-negative anaerobes.

Indications

– Animal bites, if antibiotic therapy or antibiotic prophylaxis is clearly indicated
– Second line treatment of acute otitis media and acute bacterial sinusitis, when amoxicillin alone given at high dose failed
– Acute uncomplicated cystitis (no systemic signs) in girls > 2 years
– Postpartum upper genital tract infection
– Severe pneumonia: parenteral to oral switch therapy in patients treated with ceftriaxone + cloxacillin

Presentation

– The ratio of amoxicillin and clavulanic acid varies according to the manufacturer:

Ratio 8:1	– 500 mg amoxicillin/62.5 mg clavulanic acid tablet – 500 mg amoxicillin/62.5 mg clavulanic acid/5 ml powder for oral suspension
Ratio 7:1	– 875 mg amoxicillin/125 mg clavulanic acid tablet – 400 mg amoxicillin/57 mg clavulanic acid/5 ml, powder for oral suspension
Ratio 4:1	– 500 mg amoxicillin/125 mg clavulanic acid tablet – 125 mg amoxicillin/31.25 mg clavulanic acid/5 ml, powder for oral suspension

Also comes in formultions with a ratio amoxicillin/clavulanic acid of 16:1, 14:1, 6:1, 2:1.

Dosage (expressed in amoxicillin)

– *Animal bites; second line treatment of acute otitis media and acute sinusitis*
  • Child < 40 kg: 45 to 50 mg/kg/day in 2 divided doses (if using ratio 8:1 or 7:1) or in 3 divided doses (if using ratio 4:1)
  Note: the dose of clavulanic acid should not exceed 12.5 mg/kg/day or 375 mg/day.
  • Child ≥ 40 kg and adult: 1500 to 2000 mg/day depending on the formulation available:
  Ratio 8:1: 2000 mg/day = 2 tablets of 500/62.5 mg 2 times per day
  Ratio 7:1: 1750 mg/day = 1 tablet of 875/125 mg 2 times per day
  Ratio 4:1: 1500 mg/day = 1 tablet of 500/125 mg 3 times per day
  Note: the dose of clavulanic acid should not exceed 375 mg/day.

– *Acute uncomplicated cystitis in girls > 2 years*
  25 mg/kg/day in 2 divided doses (if using ratio 8:1 or 7:1 or 4:1)
  Note: the dose of clavulanic acid should not exceed 12.5 mg/kg/day or 375 mg/day.

– *Postpartum upper genital tract infection; parenteral to oral switch therapy in severe pneumonia*
  Use formulations with a ratio 8:1 or 7:1:
  • Child < 40 kg: 80 to 100 mg/kg/day in 2 or 3 divided doses
  Note: the dose of clavulanic acid should not exceed 12.5 mg/kg/day or 375 mg/day.
  • Child ≥ 40 kg and adult: 2500 to 3000 mg/day in 3 divided doses. Depending on the formulation available:
  Ratio 8:1: 3000 mg/day = 2 tablets of 500/62.5 mg 3 times per day
  Ratio 7:1: 2625 mg/day = 1 tablet of 875/125 mg 3 times per day
  Note: the dose of clavulanic acid should not exceed 375 mg/day.

Duration

– *Animal bites*: 5 to 7 days; *otitis media*: 5 days; *sinusitis*: 7 to 10 days; *cystitis*: 3 days; *upper genital tract infection*: 7 days; *parenteral to oral switch therapy in severe pneunonia*: to complete a total of 10 to 14 days of treatment.

Contra-indications, adverse effects, precautions

– Do not administer to penicillin-allergic patients and patients with history of hepatic disorders during a previous treatment with co-amoxiclav.
– Administer with caution to patients allergic to cephalosporins (cross-sensitivity may occur).
– Administer with caution to patients with hepatic impairment; reduce dosage and give every 12 to 24 hours in patients with severe renal impairment.
– May cause: gastrointestinal disturbances (mainly diarrhoea); allergic reactions sometimes severe (stop treatment immediately); jaundice and cholestatic hepatitis in the event of prolonged treatment (> 10 to 15 days).
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– High doses of co-amoxiclav (80-100 mg/kg/day or 2.5-3 g/day) cannot be administered when using formulations of amoxicillin/clavulanic acid in a ratio of 4:1 (the content in clavulanic acid is too high). The maximum dose (expressed in amoxicillin) that can be given with these formulations is 50 mg/kg/day, without exceeding 1500 mg/day.
– Take with meals.
– *Storage: below 25°C –* –
Powder for oral suspension: between 15°C and 25°C
Once reconstituted, the oral suspension must be kept refrigerated (between 2°C and 8°C) and may be used for up to 7 days.

ARTEMETHER/LUMEFANTRINE = COARTEMETHER

Prescription under medical supervision

Therapeutic action

– Antimalarial

Indications

– Treatment of uncomplicated falciparum malaria
– Completion treatment following parenteral therapy for severe falciparum malaria

Presentation

– 20 mg artemether/120 mg lumefantrine co-formulated tablets, in blister packs, for a complete treatment for one individual
– Blister packs of 6, 12, 18 or 24 tablets, corresponding to 4 different categories of weight
– Blister-packs of 6 and 12 tablets contain dispersible tablets.

Dosage and duration

– The treatment is administered twice daily for 3 days. On D1, the first dose is given at 0 hour and the second dose at 8-12 hours. Subsequent doses on D2 and D3 are given twice daily (morning and evening).

Weight	20/120 mg tablet		
	D1	D2	D3
5 to < 15 kg	1 tab x 2	1 tab x 2	1 tab x 2
15 to < 25 kg	2 tab x 2	2 tab x 2	2 tab x 2
25 to < 35 kg	3 tab x 2	3 tab x 2	3 tab x 2
≥ 35 kg	4 tab x 2	4 tab x 2	4 tab x 2

Contra-indications, adverse effects, precautions

– Do not combine with azole antifungals (fluconazole, itraconazole, miconazole, etc.), tricyclic antidepressants, neuroleptics (chlorpromazine, haloperidol, etc.), macrolides, quinolones, other antimalarials, beta-blockers.
– May cause: nausea, headache, dizziness and gastrointestinal disturbances.
– If the patient vomits within one hour of administration: repeat the full dose.
– *Pregnancy: no contra-indication during the 2nd and 3rd trimester. Safety of coartemether in the first trimester has not been definitely established. However, given the risks associated with malaria, it may be used during the first trimester if it is the only effective treatment available.*
– *Breast-feeding: no contra-indication*

Remarks

– Take with meals.
– Coartemether should not be used for malaria prophylaxis.
– Lumefantrine is also called benflumetol.
– *Storage: below 25°C* – –
Leave tablets in blisters until use. Once a tablet is removed from its blister, it must be administered immediately.

ARTESUNATE = AS

Prescription under medical supervision

Oral artesunate must always be administered in combination with another antimalarial: artesunate-amodiaquine or artesunate-mefloquine or artesunate-sulfadoxine/pyrimethamine. These therapeutic combinations can be coformulated tablets (artesunate and the 2nd antimalarial combined in the same tablet, in blister-pack containing a complete course of treatment) or co-blistered tablets (tablets of artesunate and tablets of the 2nd antimalarial in the same blister-pack containing a complete course of treatment). Use coformulated tablets when available.

Therapeutic action

– Antimalarial

Indications

– Treatment of uncomplicated falciparum malaria
– Completion treatment following parenteral therapy for severe falciparum malaria

Presentation

– 50 mg tablet

Dosage and duration

– Child and adult: 4 mg/kg/day once daily for 3 days

Contra-indications, adverse effects, precautions

– May cause: gastrointestinal disturbances, headache and dizziness.
– *Pregnancy: no contra-indication during the 2nd and 3rd trimester. Safety of artesunate during the first trimester has not been definitely established. However, given the risks associated with malaria, a drug combination containing artesunate may be used in the first trimester if it is the only effective treatment available.*
– *Breast-feeding: no contra-indication*

Remarks

– Artesunate should not be used for malaria prophylaxis.
– *Storage: below 25°C –* –

ARTESUNATE/AMODIAQUINE = AS/AQ

Prescription under medical supervision

Therapeutic action

– Antimalarial

Indications

– Treatment of uncomplicated falciparum malaria
– Completion treatment following parenteral therapy for severe falciparum malaria

Presentation

– Co-formulated tablets of artesunate (AS)/amodiaquine (AQ), in blister packs, for a complete treatment for one individual
– There are 4 different blister packs corresponding to 4 different categories of weight:
  • 25 mg AS/67.5 mg AQ base tablet, blister pack of 3 tablets
  • 50 mg AS/135 mg AQ base tablet, blister pack of 3 tablets
  • 100 mg AS/270 mg AQ base tablet, blister pack of 3 tablets
  • 100 mg AS/270 mg AQ base tablet, blister pack of 6 tablets

Dosage and duration

– Tablets are to be taken once daily for 3 days.

Weight	Tablets	D1	D2	D3
4.5 to < 9 kg	25 mg AS/67.5 mg AQ	1 tab	1 tab	1 tab
9 to < 18 kg	50 mg AS/135 mg AQ	1 tab	1 tab	1 tab
18 to < 36 kg	100 mg AS/270 mg AQ ***blister pack of 3 tab***	1 tab	1 tab	1 tab
≥ 36 kg	100 mg AS/270 mg AQ ***blister pack of 6 tab***	2 tab	2 tab	2 tab

Contra-indications, adverse effects, precautions

– Do not administer in the event of previous severe adverse reaction to treatment with amodiaquine (e.g. hypersensitivity reaction, hepatitis, leucopenia, agranulocytosis).
– Do not administer to patients taking efavirenz.
– May cause: gastrointestinal disturbances, headache, dizziness, pruritus.
– If the patient vomits within 30 minutes after administration, re-administer the full dose.
– *Pregnancy: no contra-indication during the 2nd and 3rd trimester. Safety in the first trimester has not been definitely established. However, given the risks associated with malaria, the combination artesunate/amodiaquine may be used during the first trimester if it is the only effective treatment available.*
– *Breast-feeding: no contra-indication*

Remarks

– *Storage: below 25°C –* –
  Leave tablets in blisters until use. Once a tablet is removed from its blister, it must be administered immediately.

ARTESUNATE + SULFADOXINE/PYRIMETHAMINE = AS + SP

Prescription under medical supervision

Therapeutic action

– Antimalarial

Indications

– Treatment of uncomplicated falciparum malaria
– Completion treatment following parenteral therapy for severe falciparum malaria

Presentation

– Artesunate (AS) tablets and sulfadoxine/pyrimethamine (SP) tablets, in blister packs, for a complete treatment for one individual
– There are 4 different blister packs:
  • Child < 25 kg: blister pack with 3 tab AS 50 mg and 1 tab SP 500/25 mg
  • Child 25 to < 50 kg: blister pack with 6 tab AS 50 mg and 2 tab SP 500/25 mg
  • Child ≥ 50 kg and adult: blister pack with 12 tab AS 50 mg and 3 tab SP 500/25 mg
  or blister pack with 6 tab AS 100 mg and 3 tab SP 500/25 mg

Dosage and duration

– Artesunate is administered once daily for 3 days. Sulfadoxine/pyrimethamine is administered as a single dose on D1, with the first dose of artesunate.

Weight	Blister pack	D1	D2	D3
5 to < 10 kg	3 tab AS_{50} + 1 tab SP	½ tab AS + ½ tab SP	½ tab AS	½ tab AS
10 to < 25 kg		1 tab AS + 1 tab SP	1 tab AS	1 tab AS
25 to < 50 kg	6 tab AS_{50} + 2 tab SP	2 tab AS + 2 tab SP	2 tab AS	2 tab AS
≥ 50 kg and adult	12 tab AS_{50} + 3 tab SP	4 tab AS + 3 tab SP	4 tab AS	4 tab AS
	6 tab AS_{100} + 3 tab SP	2 tab AS + 3 tab SP	2 tab AS	2 tab AS

Contra-indications, adverse effects, precautions

– Do not administer to patients with allergy to sulfonamides.
– May cause: see artesunate and sulfadoxine/pyrimethamine.
– Do not use in combination with cotrimoxazole.
– Do not give folic acid on the same day SP is administered, or within 15 days thereafter.
– *Pregnancy: no contra-indication during the 2nd and 3rd trimester. Safety in the first trimester has not been definitely established. However, given the risks associated with malaria, the combination artesunate+SP may be used during the first trimester if it is the only effective treatment available.*
– *Breast-feeding: no contra-indication*

Remarks

– *Storage: below 25°C* – –
Leave tablets in blisters until use. Once a tablet is removed from its blister, it must be administered immediately.
If half tablets are used, remaining 1/2 tablets may be given to another patient if administered within 24 hours.

ASCORBIC acid = VITAMIN C

Therapeutic action

– Vitamin

Indications

– Treatment and prevention of scurvy (vitamin C deficiency)

Presentation

– 50 mg tablet

Also comes in 250 mg, 500 mg and 1 g tablets.

Dosage and duration

– *Treatment*
  Child: 150 to 200 mg/day in 3 or 4 divided doses
  Adult: 500 to 750 mg/day in 3 or 4 divided doses
  The treatment is continued until symptoms improve (1 to 2 weeks), then a preventive treatment is given as long as the situation requires.
– *Prevention*
  Child and adult: 25 to 50 mg/day, as long as the situation requires

Contra-indications, adverse effects, precautions

– Ascorbic acid is well tolerated at indicated doses.
– May cause: gastrointestinal disturbances and nephrolithiasis for doses > 1 g/day; may interfere with the measurement of glucose in blood and urine for doses ≥ 2 g/day.
– *Pregnancy: no contra-indication, do not exceed 1 g/day.*
– *Breast-feeding: no contra-indication*

Remarks

– *Storage: below 25°C* – –

ATENOLOL



Prescription under medical supervision

Therapeutic action

– Cardioselective beta-blocker

Indications

– Hypertension
– Prophylaxis of angina pectoris, secondary prophylaxis of myocardial infarction
– Arrhythmia

Presentation

– 50 mg tablet

Dosage

– *Hypertension*
  Adult: 50 to 100 mg once daily, preferably in the morning
– *Other indications*
  Adult: 50 to 100 mg once daily or in 2 divided doses

Duration

– According to clinical response. Do not stop treatment abruptly, decrease doses gradually.

Contra-indications, adverse effects, precautions

– Do not administer to patients with asthma, chronic obstructive bronchopneumonia, heart failure, severe hypotension, bradycardia < 50/minute, atrio-ventricular heart blocks, Raynaud's syndrome.
– May cause: bradycardia, hypotension, heart failure, bronchospasm, hypoglycaemia, gastrointestinal disturbances, headache, fatigue.
– Administer with caution to patients with diabetes (risk of hypoglycaemia).
– Reduce dosage in patients with renal impairment.
– In the event of anaphylactic shock, risk of resistance to epinephrine.
– Avoid or monitor combination with: mefloquine, digoxin, amiodarone, diltiazem, verapamil (risk of bradycardia); tricyclic antidepressants, neuroleptics, other anti-hypertensive drugs (risk of hypotension).
– Do not administer simultaneously with antacids (aluminium or magnesium hydroxide, etc.). Administer 2 hours apart.
– *Pregnancy: no contra-indication. Labetalol is preferred for the management of hypertension in pregnancy.*
– *Breast-feeding: avoid*

Remarks

– *Storage: below 25°C –*

AZITHROMYCIN

Prescription under medical supervision

Therapeutic action

– Macrolide antibacterial

Indications

– Trachoma, conjunctivitis due to *Chlamydia trachomatis*
– Cervicitis and urethritis due to Chlamydia trachomatis (in combination with a treatment for gonorrhoea), donovanosis, chancroid, early syphilis
– Cholera (if the strain is susceptible), yaws
– Pertussis, pneumonia due to *Mycoplasma pneumoniae* and *Chlamydophila pneumoniae*
– Streptococcal tonsillitis, acute otitis media, in penicillin-allergic patients only

Presentation

– 250 mg and 500 mg capsules or tablets
– 200 mg/5 ml powder for oral suspension, to be reconstituted with filtered water

Dosage and duration

– *Trachoma, cholera, cervicitis and urethritis due to C. trachomatis, chancroid, early syphilis*
Child: 20 mg/kg as a single dose (max. 1 g)
Adult: 1 g as a single dose (2 g as a single dose in early syphilis)
– *Yaws*
Child and adult: 30 mg/kg as a single dose (max. 2 g)
– *Conjunctivitis due to C. trachomatis*
Child: 20 mg/kg once daily for 3 days (max. 1 g/day)
Adult: 1 g once daily for 3 days
– *Donovanosis (granuloma inguinale)*
Adult: 1 g on D1 then 500 mg/day until healing of lesions
– *Pertussis, pneumonia due to M. pneumoniae and C. pneumoniae*
Child: 10 mg/kg once daily for 5 days (max. 500 mg/day)
Adult: 500 mg on D1 then 250 mg from D2 to D5
– *Streptococcal tonsillitis, only in penicillin-allergic patients*
Child: 20 mg/kg once daily for 3 days (max. 500 mg/day)
Adult: 500 mg once daily for 3 days
– *Acute otitis media, only in penicillin-allergic patients*
Child: 10 mg/kg once daily for 3 days (max. 500 mg/day)

Contra-indications, adverse effects, precautions

– Do not administer to patients with allergy to azithromycin or another macrolide, and to patients with severe hepatic impairment.
– May cause: gastrointestinal disturbances, heart rhythm disorders (QT prolongation), allergic reactions sometimes severe. In the event of allergic reaction, stop treatment immediately.
– Do not administer simultaneously with antacids (aluminium or magnesium hydroxide, etc.). Administer 2 hours apart.
– Avoid combination with drugs that prolong the QT interval (amiodarone, chloroquine, co-artemether, fluconazole, haloperidol, mefloquine, moxifloxacin, ondansetron, pentamidine, quinine, etc.).
– Administer with caution and monitor use in patients taking digoxin (increased digoxin plasma levels).
– *Pregnancy and breast-feeding: no contra-indication*

Remarks

– Also comes in 250 mg or 500 mg capsules, to be taken one hour before or 2 hours after a meal.
– *Storage: below 25°C –*
For the oral suspension (powder or reconstituted suspension): follow manufacturer’s instructions.

BECLOMETASONE aerosol

Prescription under medical supervision

Therapeutic action

– Anti-inflammatory drug (corticosteroid)

Indications

– Long term treatment of persistent asthma

Presentation and route of administration

– Pressurized inhalation solution of beclomatesone dipropionate, 50 micrograms and 100 micrograms/inhalation

Dosage and administration

The dosage varies from one person to another. The initial dose depends on the severity of symptoms. It may be increased or reduced over time. Always try to administer the lowest effective dose. For information:

– *Mild to moderate persistent asthma*
  Child: 100 to 400 micrograms/day in 2 or 4 divided doses
  Adult: 500 to 1000 micrograms/day in 2 or 4 divided doses

– *Severe persistent asthma*
  Child: up to 800 micrograms/day in 2 or 4 divided doses
  Adult: up to 1500 micrograms/day in 2 or 4 divided doses

Shake the inhaler. Breathe out as completely as possible. Place the lips tightly around the mouthpiece. Inhale deeply while activating the inhaler. Hold breath 10 seconds before exhaling. Verify that the inhalation technique is correct.
Co-ordination between the hand and inhalation is very difficult in certain patients (children under 6 years, elderly patients, etc.). Use a spacer to facilitate administration and improve the efficacy of treatment.

Duration

– According to clinical response

Contra-indications, adverse effects, precautions

– Do not administer to patients with untreated active tuberculosis.
– May cause: throat irritation, hoarseness at the beginning of treatment, oro-pharyngeal candidiasis.
– In the event of cough and/or bronchospasm following inhalation of beclometasone: administer salbutamol if necessary, stop inhalation of beclometasone and replace with an oral corticoid.
– In the event of bronchial infection, administer appropriate antibiotic treatment in order to optimise the diffusion of beclometasone in the respiratory tract.
– If the maximum dosage becomes insufficient, re-evaluate the severity of asthma and combine with a short oral anti-inflammatory treatment.
– <u>Pregnancy</u>: *no contra-indication*
– <u>Breast-feeding</u>: *no contra-indication*

Remarks

– Beclometasone is not a bronchodilator. For asthma attack, use inhaled salbutamol.
– Relief of symptoms may require several days or weeks of continuous therapy.
– Clean the mouthpiece before and after each use.
– Do not pierce or incinerate used aerosol containers. Empty all residual gas, then bury.
– <u>Storage</u>: *below 25°C –*

BIPERIDEN

Prescription under medical supervision

Therapeutic action

– Anticholinergic antiparkinson drug

Indications

– Extrapyramidal syndrome induced by antipsychotics

Presentation

– 2 mg tablet

Dosage

– Adult: initial dose of 2 mg/day in 2 divided doses, increased gradually if necessary up to 4 to 6 mg/day in 2 to 3 divided doses (max. 8 mg/day)
– Administer in the lowest effective dose in elderly patients.

Duration

– As long as the antipsychotic treatment lasts.

Contra-indications, adverse effects, precautions

– Do not administer to patients with closed-angle glaucoma, decompensated heart disease, prostate disorders, gastrointestinal obstruction or atony.
– Administer with caution and carefully monitor use in patients > 60 years (risk of mental confusion, hallucinations).
– May cause: anticholinergic effects (dry mouth, blurred vision, urinary retention, constipation, tachycardia), drowsiness (inform the patient that it may affect the capacity to drive or operate machinery). In these events, reduce the dose.
– Avoid or monitor combination with other drugs known to have anticholinergic effects (amitriptyline, atropine, clomipramine, promethazine, etc.).
– *Pregnancy: re-evaluate whether the antipsychotic treatment is still necessary; if treatment is continued, administer biperiden in the lowest effective dose and observe the newborn infant if the mother was under treatment in the 3rd trimester (risk of anticholinergic effect, e.g. tremors, abdominal distension).*
– *Breast-feeding: no contra-indication. Administer in the lowest effective dose and observe the child (risk of anticholinergic effects, e.g. tachycardia, constipation, thickening of bronchial secretions).*

Remarks

– Biperiden is also used in Parkinson's disease:
  • as monotherapy early in the course of the disease;
  • in combination with levodopa in the most advanced stages.
– Also comes in 4 mg extended-release tablet, administered once daily in the morning.
– *Storage:*

BISACODYL

Therapeutic action

– Stimulant laxative

Indications

– Prevention of constipation in patients taking opioid analgesics (codeine, morphine, etc.)
– Short-term, symptomatic treatment of constipation

Presentation

– 5 mg enteric-coated tablet

Dosage

– Child over 3 years: 5 to 10 mg once daily
– Adult: 10 to 15 mg once daily

Duration

– *Prevention of constipation in patients taking opioids*: start bisacodyl when analgesic treatment continues more than 48 hours. Tablets must be taken daily, at night (bisacodyl is effective 6 to 12 hours after administration), until the end of the opioid treatment. Regular follow up (frequency/consistency of stools) is essential in order to adjust dosage correctly.
– *Treatment of constipation*: until the patient passes stools, maximum 7 days.

Contra-indications, adverse effects, precautions

– Do not administer to patients with Crohn's disease, ulcerative colitis, intestinal obstruction, undiagnosed abdominal pain and dehydration.
– May cause: diarrhoea, abdominal cramps, hypokalaemia.
– In the event of diarrhoea: exclude a faecal impaction or intestinal obstruction, stop treatment for 24 hours and then start again with a half dose.
– In the event of abdominal cramps: reduce or divide the daily dose. Stop treatment if pain continues.
– Do not combine with drugs that induce torsades de pointe (halofantrine, erythromycin IV, pentamidine, etc.).
– Closely monitor patients taking drugs that induce hypokalaemia (furosemide, amphotericin B, corticosteroids, etc.) or cardiac glycosides.
– *Pregnancy and breast-feeding: avoid; for routine prevention of constipation due to opioids, use lactulose.*

Remarks

– To prevent constipation in patients taking opioids, use lactulose if the patient’s stools are solid; use bisacodyl if the patient’s stools are soft.
– In children from 6 months to 3 years, do not use the oral route. Use only 5 mg paediatric suppositories (one suppository/day).
– Swallow tablets whole; do not crush or chew.
– Bisacodyl is equivalent to senna, the representative example of laxative stimulants in the WHO list of essential medicines.
– The treatment must be accompanied by dietary measures (plenty of fluids and fibre).
– *Storage: below 25°C*

CABERGOLINE

Prescription under medical supervision

Therapeutic action

– Long-lasting lactation inhibitor

Indications

– Inhibition of lactation or suppression of established lactation in case of intrauterine foetal death or neonatal death

Presentation

– 0.5 mg scored tablet

Dosage and duration

– *Lactation inhibition*
  1 mg as a single dose on the first day post-partum
– *Lactation suppression*
  0.25 mg every 12 hours for 2 days

Contra-indications, adverse effects, precautions

– Do not administer to patients with postpartum hypertension or psychosis, preeclampsia, valvulopathy, and history of pulmonary, retroperitoneal or pericardial fibrosis.
– May cause: hypotension, valvulopathy, dizziness, headache, nausea, drowsiness, hallucinations.
– Do not combine with chlorpromazine, haloperidol, metoclopramide, promethazine (effect of cabergoline antagonised), methylergometrine (risk of vasoconstriction and hypertensive crisis), and macrolides (effect of cabergoline increased).
– Pregnancy: ***CONTRA-INDICATED***

Remarks

– The use of cabergoline is not recommended to inhibit lactation in women who chose to not breastfeed: it is not justified to expose women to the adverse effects of cabergoline, lactation will stop spontaneously.
– Cabergoline is not included in the WHO list of essential medicines.
– Cabergoline is a dopamine agonist also used in the treatment of Parkinson's disease.
– *Storage: below 25°C* – –

CALCIUM FOLINATE = FOLINIC acid

Prescription under medical supervision

Therapeutic action

– Antidote to folate antagonists

Indications

– Prevention of haemotological toxicity of pyrimethamine when pyrimethamine is used as prophylaxis for, or in the treatment of toxoplasmosis or isosporiasis in immunodeficient patients

Presentation

– 15 mg tablet

Also comes in 5 mg and 25 mg capsules.

Dosage

– *When pyrimethamine is used as primary or secondary prophylaxis for toxoplasmosis*
  Adult: 25 to 30 mg once weekly
– *During treatment of toxoplasmosis*
  Adult: 10 to 25 mg once daily
– *During treatment of isosporiasis*
  Adult: 5 to 15 mg once daily

Duration

– For the duration of the pyrimethamine treatment

Contra-indications, adverse effects, precautions

– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Folic acid cannot be used as an alternative to folinic acid for the treatment of toxoplasmosis: folic acid reduces the antiprotozoal activity of pyrimethamine.
– Calcium folinate is also called calcium leucovorin.
– *Storage: below 25°C –*

CARBAMAZEPINE



Prescription under medical supervision

Therapeutic action

– Antiepileptic

Indications

– Epilepsy (except absence seizures)
– Neuropathic pain (alone or combined with amitriptyline)

Presentation

– 200 mg tablet

Dosage

– *Epilepsy*
Child: start with 5 mg/kg once daily or in 2 divided doses, then increase every 2 weeks up to 10 to 20 mg/kg/day in 2 to 4 divided doses
Adult: start with 100 to 200 mg once daily or in 2 divided doses, then increase by 100 to 200 mg increments every 2 weeks up to 800 to 1200 mg/day in 2 to 4 divided doses
– *Neuropathic pain*
Adult: 200 mg once daily at night for one week, then 400 mg/day in 2 divided doses (morning and night) for one week, then 600 mg/day in 3 divided doses

Duration

– *Epilepsy*: lifetime treatment. Do not stop treatment abruptly, even if changing treatment to another antiepileptic.
– *Neuropathic pain*: continue several months after pain relief is obtained, then attempt to stop treatment.

Contra-indications, adverse effects, precautions

– Do not administer to patients with atrioventricular block, history of bone marrow depression.
– Administer with caution to patients with glaucoma, urinary retention, hepatic or renal impairment, heart failure or blood disorders and to elderly patients.
– May cause:
  • headache, dizziness, gastrointestinal and visual disturbances, rash, leucopenia, confusion and agitation in elderly patients, drowsiness (use with caution when driving or operating machinery);
  • rarely: severe allergic reactions (Lyell's and Stevens-Johnson syndromes), agranulocytosis, anaemia, bone marrow depression, pancreatitis, hepatitis, cardiac conduction defect. In these cases, stop treatment.
– Do not drink alcohol during treatment.
– Do not combine or monitor the combination with:
  • erythromycin, isoniazid, fluoxetine, valproic acid, etc. (increased carbamazepine plasma concentrations);
  • rifampicin (reduced efficacy of carbamazepine);
  • oral anticoagulants, oestroprogestogens (intrauterine device is preferred), corticosteroids, tricyclic antidepressants, neuroleptics, protease inhibitors, rifampicin, itraconazole, doxycycline, tramadol, etc. (reduced efficacy of these drugs).
– *Pregnancy:*
  • *Epilepsy: do not start treatment during the first trimester, except if vital and there is no alternative (risk of neural tube defects, facial and cardiac malformations, hypospadias). However, if treatment has been started before the pregnancy, do not stop treatment and use the minimal effective dose. Due to the risk of haemorrhagic disease of the newborn, administer vitamin K to the mother and the newborn infant. The administration of folic acid during the first trimester may reduce the risk of neural tube defects.*
  • *Neuropathic pain: not recommended*
– *Breast-feeding: avoid*

Remarks

– Also comes in 100 mg/5 ml oral solution, 100 mg tablet and 100 mg and 200 mg chewable tablets.
– *Storage: below 25°C –* –

CEFALEXIN

Prescription under medical supervision

Therapeutic action

– First-generation cephalosporin antibacterial

Indications

– Skin infections due to staphylococci and/or streptococci: impetigo, furuncle, erysipelas and superficial cellulitis

Presentation

– 250 mg capsule
– 125 mg/5 ml powder for oral suspension, to be reconstituted with filtered water

Dosage

– Neonate under 7 days: 50 mg/kg/day in 2 divided doses
– Neonate 7 to 28 days: 75 mg/kg/day in 3 divided doses

The exact dose should be calculated according to the newborn's weight.

– Child 1 month to 12 years: 25 to 50 mg/kg/day in 2 divided doses
– Child over 12 years and adult: 2 g/day in 2 divided doses

Age	Weight	125 mg/5 ml oral susp.	250 mg capsule
1 to < 5 months	4 to < 7 kg	1 tsp x 2	–
5 months to < 3 years	7 to < 15 kg	1½ tsp x 2	–
3 to < 6 years	15 to < 20 kg	2 tsp x 2	–
6 to < 12 years	20 to < 40 kg	–	2 cap x 2
≥ 12 years and adult	≥ 40 kg	–	4 cap x 2

Duration

– *Impetigo, furuncle*: 7 days; *erysipelas, cellulitis*: 7 to 10 days

Contra-indications, adverse effects, precautions

– Do not administer to patients with allergy to cephalosporin.
– Administer with caution to patients with allergy to penicillin (cross-sensitivity may occur) and severe renal impairment (reduce the dose).
– May cause: gastrointestinal disturbances (particularly diarrhoea), allergic reactions (skin eruption, fever, pruritus).
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Take preferably between meals.
– Also comes in 250 mg/5 ml powder for oral suspension.
– *Storage: below 25°C* – –
For the oral suspension (powder or reconstituted suspension): follow manufacturer's instructions.

CEFIXIME

Prescription under medical supervision

Therapeutic action

– Third-generation cephalosporin antibacterial

Indications

– Typhoid fever in children
– Acute cystitis in girls over 2 years, pregnant women and lactating women
– Acute pyelonephritis in adults
– Cervicitis and urethritis due to *Neisseria gonorrhoeae* (in combination with a treatment for chlamydia)

Presentation

– 200 mg tablet
– 100 mg/5 ml powder for oral suspension, to be reconstituted with filtered water

Dosage

– *Typhoid fever in children*
  Child over 3 months: 20 mg/kg/day in 2 divided doses
– *Acute cystitis in girls over 2 years*
  8 mg/kg once daily
– *Acute cystitis in pregnant and lactating women, acute pyelonephritis in adult*
  400 mg/day in 2 divided doses
– *Cervicitis and urethritis due to Neisseria gonorrhoeae*
  Child: 8 mg/kg as a single dose
  Adult: 400 mg as a single dose

Duration

– *Typhoid fever*: 7 days; *acute cystitis*: 3 days for girls and 5 days for adults; *acute pyelonephritis*: 10 to 14 days

Contra-indications, adverse effects, precautions

– Do not administer to patients with allergy to cephalosporins.
– Administer with caution to penicillin-allergic patients (cross-sensitivity may occur) and in patients with severe renal impairment (reduce dosage).
– May cause: gastrointestinal disturbances (especially diarrhoea), headache, dizziness, allergic reactions (rash, pruritus, fever). In the event of allergic reaction, stop treatment immediately.
– Pregnancy: *no contra-indication*
– Breast-feeding: *no contra-indication*

Remarks

– Also comes in 400 mg capsules.
– Storage: *below 25°C* – –
  For the oral suspension (powder or reconstituted suspension): follow manufacturer's instructions.

Activated CHARCOAL

Therapeutic action

– Adsorbent

Indications

– Poisoning by drugs, in particular: paracetamol, aspirin, ibuprofen, chloroquine, quinine, dapsone, phenobarbital, carbamazepine, digoxin
– Poisoning by other toxic substances: certain plants (datura, lantana, etc.), certain domestic, industrial or agricultural chemicals

Presentation

– Granules for oral suspension, in 50 g bottle, to be reconstituted with 250 ml of water

Dosage and duration

The dose of charcoal has to be administered as soon as possible (preferably within one hour after ingestion of the toxic compound) and swallowed within a limited period, e.g., in 15 to 20 minutes:
– Child under 1 year: 1 g/kg
– Child from 1 to 12 years: 25 g
– Child over 12 years and adult: 50 g

If the dose of charcoal is not entirely swallowed or the toxic substance was ingested in large quantities or over 2 hours beforehand: follow the treatment for 24 hours after poisoning, by administering half or a quarter of the initial dose of charcoal every 4 or 6 hours, depending on the tolerance and cooperation of the patient.

Contra-indications, adverse effects, precautions

– Do not administer in case of poisoning by caustic or foaming products, or hydrocarbons: risk of aggravation of lesions during vomiting (caustic products), aspiration pneumonia (foaming products, hydrocarbons), and airway obstruction due to foaming when vomiting (foaming products).
– The charcoal is ineffective in poisoning by: alcohols (ethanol, glycol ethylene, methanol, isopropyl alcohol, etc.), organophosphorus and carbamate insecticides, metals (lithium, iron salts, etc.).
– May cause: black colouring of stools (normal), constipation; vomiting in the event of rapid administration of large quantities.
– Do not administer charcoal simultaneously with other drugs by oral route. Administer 2 hours apart.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– To facilitate the administration of charcoal and avoid vomiting in children, mask the taste (mix with fruit juice, syrup) and administer the suspension slowly in small quantities.
– If there is a specific antidote to the drug ingested, use it in complement.
– *Storage: below 25°C –*

CHLORAMPHENICOL



Prescription under medical supervision

The use of chloramphenicol should be restricted to severe infections when other less toxic antibacterials are not effective or contra-indicated.

Therapeutic action

– Phenicol antibacterial

Indications

– Alternative to first-line treatments of bubonic plague
– Alternative to first-line treatments of typhoid fever
– Completion treatment following parenteral therapy with chloramphenicol

Presentation

– 250 mg capsule

Dosage

– Child from 1 year to less than 13 years: 50 mg/kg/day in 3 to 4 divided doses; 100 mg/kg/day in severe infection (max. 3 g/day)
– Child ≥ 13 years and adult: 3 to 4 g/day in 3 to 4 divided doses

Age	Weight	250 mg capsule
1 to < 4 years	10 to < 17 kg	1 cap x 3
4 to < 9 years	17 to < 30 kg	2 cap x 3
9 to < 13 years	30 to < 45 kg	3 cap x 3
≥ 13 years and adult	≥ 45 kg	4 cap x 3

Duration

– Plague: 10 days; typhoid fever: 10 to 14 days

Contra-indications, adverse effects, precautions

– Do not administer to children under 1 year.
– Do not administer to patients with:
  • history of allergic reaction or bone marrow depression during a previous treatment with chloramphenicol;
  • G6PD deficiency.
– May cause:
  • dose-related haematological toxicity (bone marrow depression, anaemia, leucopenia, thrombocytopenia), allergic reactions. In these events, stop treatment immediately;
  • gastrointestinal disturbances, peripheral and optic neuropathies.
– Reduce dosage in patients with hepatic or renal impairment.
– Avoid or monitor combination with potentially haematotoxic drugs (carbamazepine, cotrimoxazole, flucytocine, pyrimethamine, zidovudine, etc.).
– *Pregnancy*: ***CONTRA-INDICATED****, except if vital, if there is no therapeutic alternative. If used during the 3rd trimester, risk of grey syndrome in the newborn infant (vomiting, hypothermia, blue-grey skin colour and cardiovascular depression).*
– *Breast-feeding*: ***CONTRA-INDICATED***

Remarks

– Oral treatment is more effective than parenteral treatment: blood and tissue concentrations are higher when chloramphenicol is given orally.
– Capsules can be opened and their content mixed into a spoon with food.
– Also comes in 150 mg/5 ml powder for oral suspension.
– *Storage: below 25°C –*

CHLOROQUINE sulfate or phosphate



Given that resistance of *P. falciparum* to chloroquine is widespread, this drug must not be used for the treatment of falciparum malaria in Africa, South America, Asia and Oceania.

Therapeutic action

– Antimalarial

Indications

– Treatment of malaria due to *P. vivax*, *P. ovale* and *P. malariae*
– Treatment of uncomplicated falciparum malaria, only in areas where *P. falciparum* is still sensitive to chloroquine (Central America, Haiti and Dominican Republic)
– Prophylaxis of falciparum malaria for non-immune individuals, only in areas where resistance to chloroquine is moderate and always in combination with proguanil

Presentation

– 100 mg and 150 mg chloroquine base tablets
– 50 mg chloroquine base/5 ml syrup

The dose written on the labels is sometimes in chloroquine salt and sometimes in chloroquine base which leads to frequent confusion. The WHO recommends prescriptions and labels in chloroquine base.
100 mg base = approx. 130 mg sulfate = approx. 160 mg phosphate or diphosphate
150 mg base = approx. 200 mg sulfate = approx. 250 mg phosphate or diphosphate

Dosage and duration

– *Treatment of malaria*
  Child and adult: 25 mg/kg total dose for 3 days of treatment
  Day 1 and Day 2: 10 mg base/kg once daily
  Day 3: 5 mg base/kg

– *Prophylaxis of falciparum malaria in areas where resistance to chloroquine is moderate*
  Child: 1.7 mg chloroquine base/kg once daily (always combined with proguanil)
  Adult: 100 mg chloroquine base once daily (always combined with proguanil)
  Travellers should start prophylaxis 24 hours before departure, continue throughout the stay and for at least 4 weeks after return.

  In areas where resistance to chloroquine is high, chloroquine must be replaced by another effective antimalarial suitable for prophylactic use.

Contra-indications, adverse effects, precautions

– Do not administer to patients with retinopathy.
– May cause: gastrointestinal disturbances, headache, transitory pruritus (lasting 72 hours), allergic reactions (urticaria, angioedema), visual disturbances.
– If the patient vomits within one hour after administration:
  • during the first 30 minutes: repeat the full dose;
  • after 30 minutes: give half the dose.

- There is a narrow margin between the therapeutic and toxic dose. Doses of 20 mg base/kg in children and 2 g base in adults are considered toxic.
- Do not combine with: coartemether, quinine, mefloquine, halofantrine.
- Do not administer simultaneously with antacids (aluminium hydroxide, etc.): administer 2 hours apart.
- *Pregnancy: no contra-indication*
- *Breast-feeding: no contra-indication*

Remarks

- Chloroquine alone (without proguanil) is used as a prophylactic drug in certain areas where only *P. vivax* is present.
- Resistance of *P. vivax* to chloroquine exists in Indonesia and Oceania.
- *Storage: below 25°C* –

CHLORPHENAMINE = CHLORPHENIRAMINE

Therapeutic action

- Sedating antihistamine

Indications

- Symptomatic treatment of minor allergic reactions (contact dermatitis, seasonal allergy, allergy to drugs, food, etc.)

Presentation

- 4 mg tablet

Also comes in 2 mg/5 ml oral solution.

Dosage

- Child from 1 to 2 years: 1 mg 2 times daily
- Child from 2 to 6 years: 1 mg 4 to 6 times daily (max. 6 mg/day)
- Child from 6 to 12 years: 2 mg 4 to 6 times daily (max. 12 mg/day)
- Child over 12 years and adult: 4 mg 4 to 6 times daily (max. 24 mg/day)

Age	Weight	4 mg tablet
< 1 year	< 10 kg	**Do not administer**
1 to < 2 years	10 to < 13 kg	¼ tab x 2
2 to < 6 years	13 to < 21 kg	¼ tab x 4
6 to < 12 years	21 to < 37 kg	½ tab x 4
≥ 12 years and adult	≥ 37 kg	1 tab x 4

Duration

- According to clinical response; as short as possible.

Contra-indications, adverse effects, precautions

- Administer with caution and monitor use in patients with prostate disorders or closed-angle glaucoma, patients > 60 years and children (risk of agitation, excitability).
- May cause: drowsiness (caution when driving/operating machinery), anticholinergic effects (dry mouth, blurred vision, constipation, tachycardia, disorders of micturition), headache, tremor, allergic reactions.
- Monitor combination with CNS depressants (opioid analgesics, antipsychotics, sedatives, antidepressants, etc.).
- Avoid alcohol during treatment.
- *Pregnancy: no contra-indication; NO PROLONGED TREATMENT*
- *Breast-feeding: no contra-indication; monitor the child for excessive somnolence.*

Remarks

- Chlorphenamine is less sedating than promethazine.
- Dexchlorpheniramine has the same indications:
  - child 1 to 2 years: 0.25 mg 2 to 3 times daily
  - child 2 to 6 years: 0.5 mg 2 to 3 times daily
  - child 6 to 12 years: 1 mg 3 to 4 times daily
  - child over 12 years and adult: 2 mg 3 to 4 times daily
- *Storage: below 25°C*

CHLORPROMAZINE



Prescription under medical supervision

Therapeutic action

– Sedative antipsychotic (neuroleptic)

Indications

– Acute or chronic psychosis
– Severe anxiety not controlled by benzodiazepines

Presentation

– 25 mg tablet

Also comes in 100 mg tablets.

Dosage

– *Acute or chronic psychosis*
  Adult: initial dose of 75 mg/day in 3 divided doses; if necessary, the dose may be gradually increased up to 300 mg/day in 3 divided doses (max. 600 mg/day). Once the patient is stable, the maintenance dose is administered once daily in the evening.
– *Severe anxiety not controlled by benzodiazepines*
  Adult: 75 to 150 mg/day in 3 divided doses
– Whatever the indication, reduce the dose by half in elderly patients.
– Use the lowest effective dose, especially in the event of prolonged treatment.

Duration

– *Acute psychosis*: minimum 3 months; chronic psychosis: minimum one year. The treatment should be discontinued gradually (over 4 weeks). If signs of relapse occur, increase the dose.
– *Severe anxiety*: maximum 4 weeks.

Contra-indications, adverse effects, precautions

– Do not administer to patients with closed-angle glaucoma, prostate disorders; to elderly patients with dementia (e.g. Alzheimer's disease).
– Administer with caution and carefully monitor use in patients > 60 years; patients with epilepsy, chronic constipation, renal or hepatic impairment, Parkinson's disease, myasthenia gravis.
– May cause:
  • drowsiness (caution when driving/operating machinery), orthostatic hypotension, sexual dysfunction;
  • anticholinergic effects (dry mouth, blurred vision, urinary retention, constipation, tachycardia);
  • extrapyramidal syndrome, early or tardive dyskinesia, photosensitivity (patients must protect themselves from sunlight), jaundice; neuroleptic malignant syndrome (unexplained hyperthermia with neuromuscular disorders), rare but requiring immediate treatment discontinuation.
– In the event of extrapyramidal symptoms, combine with biperiden.
– Avoid or monitor combination with: drugs which lower the seizure threshold (mefloquine, chloroquine, tramadol, tricyclic or SSRI antidepressants); CNS depressants (opioid analgesics, sedatives, H1 antihistamines, etc.); drugs known to have anticholinergic effects (amitriptyline, atropine, clomipramine, promethazine, etc.); antidiabetics, lithium.
– Avoid alcohol during treatment.
– Chlorpromazine is irritating to the skin/mucous membranes: do not crush tablets.
– *Pregnancy: re-evaluate whether the treatment is still necessary; if it is continued, monitor the newborn infant for extrapyramidal and/or anticholinergic effects (tremor, abdominal distension, hyperexcitability, etc.) if the mother was under high dose treatment in the 3rd trimester.*
– *Breast-feeding: avoid*

Remarks

– In the event of agitation or aggressiveness in patients under other antipsychotic treatment (e.g. risperidone or haloperidol), chlorpromazine may be administered at the dose of 75 to 150 mg/day in 3 divided doses for a few days.
– Chlorpromazine produces less extrapyramidal symptoms than haloperidol but orthostatic hypotension and anticholinergic effects are more frequent.
– *Storage: below 25°C*

CIMETIDINE

Prescription under medical supervision

Therapeutic action

– Antiulcer agent (histamine H2-receptor antagonist)

Indications

– Prophylaxis of acid pulmonary aspiration syndrome in anaesthesia:
  • in patients with a full stomach (emergency caesarean section, etc.)
  • when a difficult intubation is expected

Presentation

– 200 mg effervescent tablet

Also comes 800 mg effervescent tablet.

Dosage and duration

– Adult: 200 to 400 mg as a single dose if possible one hour before anaesthetic induction

Contra-indications, adverse effects, precautions

– May cause: diarrhoea, headache, dizziness, skin rash, fever.
– Do not administer with an antacid (aluminium hydroxide, etc.).

Remarks

– Effervescent cimetidine can be replaced by effervescent ranitidine, another H2-receptor antagonist, as a single dose of 150 mg.
– The onset of acid inhibition with cimetidine non-effervescent tablets (200 mg, 400 mg and 800 mg film coated tablets) or ranitidine non-effervescent tablets (150 mg and 300 mg film coated tablets) occurs 30 minutes after administration. The effervescent tablets containing sodium citrate have a more rapid onset of action, and can thus be used for emergency surgery.
– Omeprazole, another antiulcer agent (proton pump inhibitor), is not compatible with emergency situations as it must be administered at least 4 hours before surgery.
– Cimetidine in film coated tablets is also used in the treatment of gastro-oesophageal reflux and peptic ulcer. Use by preference ranitidine or omeprazole for these indications.
– *Storage: below 25°C – –*

CIPROFLOXACIN

Prescription under medical supervision

Therapeutic action

– Fluoroquinolone antibacterial

Indications

– Shigellosis, typhoid fever, cutaneous anthrax
– Uncomplicated acute cystitis in non-pregnant women or in the event of previous treatment failure, acute prostatitis, uncomplicated acute pyelonephritis, chancroid

Presentation

– 250 mg and 500 mg tablets
– 250 mg/5 ml granules and solvent for oral suspension

Dosage

– *Shigellosis, typhoid fever, cutaneous anthrax*
Child over 1 month: 30 mg/kg/day in 2 divided doses (max. 1 g/day)
Adult: 1 g/day in 2 divided doses

Age	Weight	250 mg/5 ml susp.	250 mg tablet	500 mg tablet
1 to < 3 months	4 to < 6 kg	1.5 ml x 2	-	-
3 to < 7 months	6 to < 8 kg	2 ml x 2	-	-
7 months to < 2 years	8 to < 12 kg	2.5 ml x 2	-	-
2 to < 3 years	12 to < 15 kg	4 ml x 2	-	-
3 to < 8 years	15 to < 26 kg	5 ml x 2	1 tab x 2	-
8 to < 11 years	26 to < 36 kg	8 ml x 2	-	-
≥ 11 years and adult	≥ 36 kg	-	2 tab x 2	1 tab x 2

– *Uncomplicated acute cystitis in non-pregnant women*
Adult: 500 mg/day in 2 divided doses

– *Acute cystitis (in the event of recurrence or treatment failure), acute prostatitis, chancroid*
Adult: 1 g/day in 2 divided doses

– *Uncomplicated acute pyelonephritis*
Adult: 1 to 1.5 g/day in 2 to 3 divided doses

Duration

– *Shigellosis, uncomplicated cystitis, chancroid*: 3 days; *cystitis (in the event of recurrence or treatment failure)*: 5 days; *typhoid fever*: 5 to 7 days; *pyelonephritis*: 7 days; *cutaneous anthrax*: 7 to 10 days; *prostatitis*: 28 days

Contra-indications, adverse effects, precautions

– Do not administer to patients with history of allergy or tendinitis due to fluoroquinolones.
– Administer with caution to epileptic patients (risk of seizures).
– Reduce the dose by half in patients with renal impairment.
– May cause: gastrointestinal disturbances, neurological disorders (headache, dizziness, confusion, hallucinations, seizures), allergic reaction, peripheral neuropathy, photosensitivity (protect skin from sun exposure), arthralgia, myalgia, tendon damage (especially Achilles tendinitis), QT interval prolongation, hypo/hyperglycaemia, haemolytic anaemia in patients with G6PD deficiency. In the event of allergic reaction, severe neurological disorders, peripheral neuropathy or tendinitis, stop treatment immediately.
– Avoid combination with drugs that prolong the QT interval (amiodarone, chloroquine, co-artemether, fluconazole, haloperidol, mefloquine, ondansetron, pentamidine, quinine, etc.).
– Monitor patients taking glibenclamide (risk of hypoglycaemia).
– Do not administer simultaneously with antacids (aluminium or magnesium hydroxide, etc.), iron salts, calcium. Administer 2 hours apart.
– Drink a lot of liquid during treatment (risk of crystalluria).
– *Pregnancy: reserved for severe infections, when there is no therapeutic alternative.*
– *Breast-feeding: no contra-indication*

Remarks

– *Storage: below 25°C –*

CLINDAMYCIN



Prescription under medical supervision

Therapeutic action

– Lincosamide antibacterial

Indications

– Severe staphylococcal and/or streptococcal infections (e.g. erysipelas, cellulitis, cutaneous anthrax, pneumonia):
  • in betalactam-allergic patients
  • in infections due to methicillin-resistant *Staphylococcus aureus*
– Completion treatment following parental therapy with clindamycin

Presentation

– 150 mg and 300 mg capsules

Dosage

– Child: 30 to 40 mg/kg/day in 3 divided doses
– Adult: 1800 mg/day in 3 divided doses

Age	Weight	150 mg capsule	300 mg capsule
1 to < 6 years	10 to < 20 kg	1 cap x 3	–
6 to < 9 years	20 to < 30 kg	–	1 cap x 3
9 to < 13 years	30 to < 45 kg	3 cap x 3	–
≥ 13 years and adult	≥ 45 kg	–	2 cap x 3

Duration

– *Erysipelas, cellulitis*: 7 to 10 days; *cutaneous anthrax*: 7 to 14 days depending on severity; *pneumonia*: 10 to 14 days

Contra-indications, adverse effects, precautions

– Do not administer to patients with allergy to lincosamides or history of pseudomembranous colitis.
– Reduce dosage in patients with hepatic impairment.
– May cause: pseudomembranous colitis, rash, jaundice, severe allergic reactions. In these cases, stop treatment.
– In the event of pseudomembranous colitis, treat for *Clostridium difficile* infection (oral metronidazole).
– Do not administer simultaneously with antacids (aluminium or magnesium hydroxide, etc.). Administer 2 hours apart.
– *Pregnancy: no contra-indication*
– *Breast-feeding: use only when there is no therapeutic alternative. Check infant's stools (risk of pseudomembranous colitis).*

Remarks

– Capsules are not suitable for children under 6 years (risk of aspiration). Open the capsule and mix the content into a spoon with food or fruit juice to mask the unpleasant taste.
– Clindamycin is use in combination with quinine for the treatment of malaria in pregnant women (20 mg/kg/day in 2 divided doses for 7 days).
– Also comes in 75 mg/5 ml oral suspension.
– *Storage: below 25°C* – –

CLOMIPRAMINE



Prescription under medical supervision

Therapeutic action

– Tricyclic antidepressant

Indications

– Major depression
– Prevention of panic attacks

Presentation

– 25 mg tablet

Also comes in 10 mg tablet.

Dosage

– Adult: initial dose of 25 mg once daily at bedtime, then increase gradually over one week to 75 mg once daily at bedtime (max. 150 mg/day).
– Reduce the dose by half in elderly patients and in patients with hepatic or renal impairment.

Duration

– *Depression*: 6 months minimum. The treatment should be discontinued gradually (dose tapered over 4 weeks). If signs of relapse occur, increase the dose.
– *Prevention of panic attacks*: 2 to 3 months once panic attacks cease then discontinue gradually over 4 weeks.

Contra-indications, adverse effects, precautions

– Do not administer to patients with recent myocardial infarction, arrhythmia, closed-angle glaucoma, prostate disorders.
– Administer with caution and carefully monitor use in patients > 60 years and in patients with epilepsy, chronic constipation, renal or hepatic impairment, history of bipolar disorders.
– May cause:
  • drowsiness (caution when driving/operating machinery) or insomnia, orthostatic hypotension, sexual dysfunction;
  • anticholinergic effects: dry mouth, blurred vision, constipation, tachycardia, disorders of micturition. These adverse effects are transitory or disappear with dose reduction. Treatment should be discontinued in the event of severe reactions (mental confusion, urinary retention, cardiac rhythm disorders);
  • psychic disorders: exacerbation of anxiety, possibility of a suicide attempt at the beginning of therapy, manic episode during treatment.
– Do not combine with another antidepressant.
– Monitor combination with CNS depressants (opioid analgesics, sedatives, H1 antihistamines, etc.), drugs known to have anticholinergic effects (atropine, chlorpromazine, promethazine, etc.), drugs which lower the seizure threshold (antipsychotics, mefloquine, tramadol, etc.), lithium and other serotonergics.
– Avoid alcohol during treatment.
– *Pregnancy: re-evaluate whether the treatment is still necessary; if it is continued, observe the newborn infant the first few days (risk of neurological and gastrointestinal disorders).*
– *Breast-feeding: no contra-indication*

Remarks

– The antidepressant effect is not immediate. It is necessary to wait 3 weeks before assessing therapeutic efficacy. This must be explained to the patient.
– Clomipramine causes less sedation, anticholinergic effects and orthostatic hypotension than amitriptyline.
– *Storage: below 25°C*

CLOXACILLIN

Prescription under medical supervision

Therapeutic action
– Penicillin antibacterial

Indications
– Impetigo (preferably use cefalexin for this indication)

Presentation
– 250 mg and 500 mg capsules

Dosage and duration
– Child over 10 years: 50 mg/kg/day in 3 divided doses for 7 days (max. 3 g/day)
– Adult: 3 g/day in 3 divided doses for 7 days

Age	Weight	250 mg capsule	500 mg capsule
10 to < 13 years	30 to < 45 kg	2 cap x 3	1 cap x 3
13 to < 15 years	45 to < 55 kg	3 cap x 3	–
Adult	≥ 55 kg	4 cap x 3	2 cap x 3

Contra-indications, adverse effects, precautions
– Do not administer to patients with allergy to penicillin.
– Administer with caution to patients with allergy to cephalosporins (cross-sensitivity may occur) or severe renal impairment (reduce the dosage).
– May cause: gastrointestinal disturbances (particularly diarrhoea), allergic reactions sometimes severe; rarely, haematological disorders.
– Do not combine with methotrexate (increased methotrexate toxicity).
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks
– Take between meals.
– Dicloxacillin, flucloxacillin and oxacillin are antibacterials used for the same indication.
– Also comes in powder for oral solution 125 mg/5 ml and 1 g capsules.
– *Storage: below 25°C –*

CODEINE



Prescription under medical supervision

Therapeutic action

– Opioid analgesic

Indications

– Moderate pain, alone or in combination with a non-opioid analgesic

Presentation

– 30 mg codeine phosphate tablet

Also comes in 1 mg/ml codeine phosphate syrup.

Dosage

– Child from 6 months to 12 years: 0.5 to 1 mg/kg every 4 to 6 hours
– Child over 12 years and adult: 30 to 60 mg every 4 to 6 hours; maximum 240 mg/day

Duration

– According to clinical evolution

Contra-indications, adverse effects, precautions

– Do not administer to patients with acute respiratory depression or asthma attack.
– May cause:
  • constipation, nausea, vomiting, drowsiness, dizziness;
  • rarely: respiratory depression, allergic reactions, dependence, withdrawal syndrome.
– Do not combine with:
  • other agonist opioids such as morphine (increased risk of respiratory depression);
  • agonist-antagonist opioids such as buprenorphine, nalbuphine, pentazocine (competitive action).
– Reduce dosage in patients with renal or hepatic impairment and in elderly patients.
– Management of respiratory depression includes assisted ventilation and/or administration of naloxone.
– *Pregnancy: no contra-indication. The newborn infant may develop withdrawal symptoms, respiratory depression and drowsiness in the event of prolonged administration of large doses at the end of the 3rd trimester. In this event, closely monitor the newborn infant.*
– *Breast-feeding: use with caution, for a short period (2-3 days), at the lowest effective dose. Monitor the mother and the infant: in the event of excessive drowsiness, stop treatment.*

Remarks

– Administer systematically an appropriate laxative (e.g. lactulose) if analgesic treatment continues more than 48 hours.
– Codeine is also used for the short-term symptomatic treatment of dry, unproductive cough in adult: 15 to 30 mg 3 to 4 times per day.
– In some countries, codeine is on the list of narcotics: follow national regulations.
– *Storage: below 25°C –*

COTRIMOXAZOLE
= SULFAMETHOXAZOLE (SMX)/TRIMETHOPRIM (TMP)

Prescription under medical supervision

Therapeutic action

– Combination of a sulfonamide with another antibacterial

Indications

– First-line treatment of pneumocystosis and isosporiasis
– Prophylaxis of pneumocystosis, toxoplasmosis and isosporiasis
– Brucellosis (when doxycycline is contra-indicated)

Presentation

– 400 mg SMX + 80 mg TMP and 800 mg SMX + 160 mg TMP tablets
– 100 mg SMX + 20 mg TMP tablet for paediatric use
– 200 mg SMX + 40 mg TMP/5 ml oral suspension

Dosage and duration

– *Treatment of pneumocystosis*
  Child: 100 mg SMX + 20 mg TMP/kg/day in 2 divided doses
  Adult: 4800 SMX + 960 TMP/day in 3 divided doses
– *Treatment of isosporiasis*
  Adult: 3200 mg SMX + 640 mg TMP/day in 2 divided doses
– *Prophylaxis of pneumocystosis, toxoplasmosis and isosporiasis*
  Child: 50 mg SMX + 10 mg TMP/kg once daily, as long as necessary
  Adult: 800 mg SMX + 160 mg TMP once daily, as long as necessary
– *Brucellosis*
  Child: 40 mg SMX + 8 mg TMP/kg/day in 2 divided doses
  Adult: 1600 mg SMX + 320 mg TMP/day in 2 divided doses

Duration

– *Pneumocystosis*: 14 to 21 days depending on severity; *isosporiasis*: 10 days; *brucellosis*: 6 weeks

Contra-indications, adverse effects, precautions

– Do not administer to children under 1 month.
– Do not administer to sulfonamide-allergic patients; patients with severe renal or hepatic impairment.
– May cause:
  • gastrointestinal disturbances, hepatic or renal disorders (crystalluria, etc.), metabolic disorders (hyperkalaemia); neuropathy, photosensitivity, haemolytic anaemia in patients with G6PD deficiency;
  • allergic reactions (fever, rash, etc.) sometimes severe (Lyell's and Stevens-Johnson syndromes, haematological disorders, etc.). In these cases, stop treatment immediately;
  • megaloblastic anaemia due to folinic acid deficiency in patients receiving prolonged treatment (in this event, administer calcium folinate).
– Adverse effects occur more frequently in patients with HIV infection.
– In the event of prolonged treatment, monitor blood count if possible.
– Do not combine with methotrexate and phenytoin.
– Avoid combination with drugs inducing hyperkalaemia: potassium, spironolactone, enalapril, NSAIDs, heparin (increased risk of hyperkalaemia).
– Monitor combination with zidovudine (increased haematotoxicity).
– Drink a lot of liquid during treatment.
– *Pregnancy: no contra-indication. However, avoid using during the last month of pregnancy (risk of jaundice and haemolytic anaemia in the newborn infant).*
– *Breast-feeding: avoid if premature infant, jaundice, low-birth weight, infant under one month of age. If cotrimoxazole is used, observe the infant for signs of jaundice.*

Remarks

– *Storage: below 5°C*
  Once the bottle has been opened, the oral suspension keeps for 20 days at ambient temperature or 40 days refrigerated (between 2°C and 8°C).

DAPSONE



Prescription under medical supervision

Therapeutic action

- Sulfone antibacterial
- Antileprotic

Indications

- Prophylaxis of toxoplasmosis and pneumocystosis
- Treatment of pneumocystosis
- Paucibacillary and multibacillary leprosy, in combination with other antileprotics

Presentation

- 25 mg, 50 mg and 100 mg tablets

Dosage

- P*rophylaxis of pneumocystosis only*
  Child: 2 mg/kg once daily, without exceeding 100 mg/day
  Adult: 100 mg once daily
- *Prophylaxis of toxoplasmosis and pneumocystosis*
  Child: 2 mg/kg once daily, without exceeding 25 mg/day (in combination with pyrimethamine 1 mg/kg once daily + folinic acid 10 mg/week)
  Adult:
  • 50 mg once daily (in combination with pyrimethamine 50 mg/week + folinic acid 25 to 30 mg/week)
  • or 200 mg once weekly (in combination with pyrimethamine 75 mg/week + folinic acid 25 to 30 mg/week)
- *Treatment of pneumocystosis* (in combination with 15 mg/kg/day of trimethoprime)
  Child: 2 mg/kg once daily, without exceeding 100 mg/day
  Adult: 100 mg once daily
- *Paucibacillary and multibacillary leprosy*
  Child under 10 years: 25 mg once daily
  Child from 10 to 14 years: 50 mg once daily
  Adult: 100 mg once daily

Duration

- *Prophylaxis of toxoplasmosis and pneumocystosis*: as long as necessary; *treatment of pneumocystosis*: 21 days; *paucibacillary leprosy*: 6 months; *multibacillary leprosy*: 12 months

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to sulfones or severe anaemia (first treat anaemia).
- Administer with caution to patients with renal or hepatic impairment.
- May cause: haemolytic anaemia in patients with G6PD deficiency, dose-related haemolytic anaemia, neutropenia, methaemoglobinaemia, pruritus, rash, gastrointestinal disturbances, peripheral neuropathies, agranulocytosis; hypersensitivity reactions during the first month of treatment (fever, jaundice, hepatitis, adenopathy, exfoliative dermatitis, etc.) requiring permanent discontinuation of treatment.
- Monitor blood count and transaminases if possible.
- Do not administer simultaneously with didanosine: administer each drug 2 hours apart.
- Monitor combination with zidovudine (increased haematological toxicity).
- *Pregnancy: no contra-indication*
- *Breast-feeding: no contra-indication*

Remarks

- For the treatment of leprosy, dapsone must always be used in combination with rifampicin (paucibacillary leprosy) or rifampicin + clofazimine (multibacillary leprosy) in order to avoid the emergence of resistance.
- *Storage: below 25°C –* –

DESOGESTREL

Prescription under medical supervision

Therapeutic action

– Hormonal contraceptive, progestogen

Indications

– Oral contraception

Presentation

– 75 micrograms (0.075 mg) tablet, 28-day pack

Dosage

– 1 tablet daily at the same time, continuously, including during menstruation
  Start the first day of menstruation or immediately after abortion or as of the 21st day after childbirth if the woman does not breastfeed.
  It is also possible to start at any moment of the cycle (if the woman is not pregnant). In this case, contraception will be effective as of the 3rd tablet. It is essential to use condoms during the first 2 days.

Duration

– If there are no adverse effects, as long as contraception is desired.

Contra-indications, adverse effects, precautions

– Do not administer to women with breast cancer, severe or recent liver disease, unexplained vaginal bleeding, current thromboembolic disorders.
– May cause: amenorrhoea, menstrual disturbances, nausea, weight gain, breast tenderness, mood changes, acne, headache.
– Hepatic enzyme inducers (rifampicin, rifabutin, nevirapine, ritonavir, phenobarbital, phenytoin, carbamazepine, griseofulvin, etc.) reduce the contraceptive efficacy. Use copper intrauterine device or condoms or injectable medroxyprogesterone.
– *Pregnancy*: ***CONTRA-INDICATED***
– *Breast-feeding: it is recommended to wait 6 weeks after childbirth before starting desogestrel in breastfeeding women. However, if it is the only contraceptive method available or acceptable, it can be started 3 weeks after childbirth.*

Remarks

– Desogestrel is a possible alternative when estroprogestogens are contra-indicated or poorly tolerated. It is preferred to levonorgestrel as its contraceptive efficacy is similar to that of estroprogestogens.
– If a woman misses a tablet, she should take it as soon as possible and continue treatment as normal. If she misses by over 12 hours, contraceptive protection will be lessened. It is therefore recommended to use an additional contraceptive method: condoms for 7 days and, if she has had sexual intercourse within 5 days before forgetting the tablet, emergency contraception.
– *Storage: below 25°C*

DIAZEPAM



Prescription under medical supervision

Therapeutic action

– Anxiolytic, sedative, anticonvulsant, muscle relaxant

Indications

– Agitation and anxiety
– Muscle spasms

Presentation

– 5 mg tablet

Also comes in 2 mg and 10 mg tablets and 1% oral solution.

Dosage

– Adult: 5 to 15 mg/day in 3 divided doses
– Do not exceed indicated doses.

Duration

– According to clinical response ; the shortest duration possible.

Contra-indications, adverse effects, precautions

– Do not administer to patients with severe respiratory insufficiency or severe hepatic impairment.
– May cause:
  • feeling of inebriation, drowsiness (administer with caution when driving or operating machinery);
  • dependence and tolerance when used for more than 10-15 days. At the end of treatment, reduce doses gradually to avoid withdrawal syndrome or rebound effect;
  • in the event of overdose: ataxia, muscular weakness, hypotension, confusion, lethargy, respiratory depression, coma.
– Reduce the dose by one half in elderly patients and in patients with renal or hepatic impairment.
– Risk of increased sedation when combined with alcohol and drugs acting on the central nervous system: opioid analgesics, neuroleptics (chlorpromazine, haloperidol, etc.), antihistamines (chlorphenamine, promethazine), antidepressants (clomipramine, fluoxetine, etc.), phenobarbital, etc.
– *Pregnancy: avoid*
– *Breast-feeding: avoid*

Remarks

– Diazepam is subject to international controls: follow national regulations.
– Diazepam is not a treatment for depression, chronic anxiety, or post-traumatic stress syndrome.
– *Storage: below 25°C –*

DIETHYLCARBAMAZINE



Prescription under medical supervision

Therapeutic action
– Anthelminthic (antifilarial)

Indications
– Lymphatic filariasis

Presentation
– 50 mg and 100 mg tablets

Dosage
– Child under 10 years: 0.5 mg/kg as a single dose on the first day, then increase the dose gradually over 3 days to 3 mg/kg/day in 3 divided doses
– Child over 10 years and adult: 1 mg/kg as a single dose on the first day, then increase the dose gradually over 3 days to 6 mg/kg/day in 3 divided doses

Duration
– *W. bancrofti*: 12 days; *B. malayi, B. timori*: 6 to 12 days

Contra-indications, adverse effects, precautions
– Do not administer to patients with onchocerciasis or heavy *Loa loa* microfilareamia; to infants, elderly patients and patients with heart or renal diseases.
– Do not administer during an acute attack.
– Administer with caution in patients with history of seizures.
– May cause:
  • nausea, vomiting, headache, dizziness, drowsiness, fever, joint pain, urticaria, transient haematuria, subcutaneous nodules, lymphangitis, localized oedema;
  • in patients with associated onchocerciasis: severe ocular damages (optic nerve lesions, retinal lesions);
  • in patients with associated loiasis: encephalitis (potentially fatal) if *Loa loa* microfilaraemia is high.
– Reduce dosage in patients with renal impairment.
– *Pregnancy*: ***CONTRA-INDICATED*** *(treatment may be deferred until after delivery)*
– *Breast-feeding: not recommended*

Remarks
– In countries with a national programme for the elimination of bancroftian filariasis, the combination diethylcarbamazine + albendazole is administered as a single annual dose for 4 to 6 years. This regimen is only suitable for countries that are free from *Onchocerca volvulus* and/or *Loa loa*.
– Diethylcarbamazine is included in the WHO complementary list of essential medicines.
– *Storage: between 15°C and 25°C –*

DIGOXIN



Prescription under medical supervision

Therapeutic action

– Cardiotonic

Indications

– Supraventricular arrhythmias (fibrillation, flutter, paroxysmal tachycardia)
– Heart failure

Presentation

– 62.5 µg (0.0625 mg) and 250 µg (0.25 mg) tablets

Also comes in 50 µg/ml oral solution (0.05 mg/ml).

Dosage

– Adult:
  • loading dose: 750 to 1500 µg (0.75 to 1.5 mg) in 3 to 4 divided doses. Do not exceed 1500 µg during the first 24 hours.
  • maintenance dose: 125 to 250 µg/day (0.125 to 0.25 mg) once daily or in 2 divided doses
– Reduce the dose by one half in elderly patients and in patients with renal impairment.

Duration

– According to clinical response

Contra-indications, adverse effects, precautions

– Do not administer to patients with bradycardia, ill defined arrhythmia, coronary artery disease.
– It is essential to monitor pulse in the initial stage of treatment.
– Narrow margin between therapeutic and toxic dose.
– May cause in the event of overdose: gastrointestinal disturbances (nausea, vomiting, diarrhoea), blurred vision, headache, confusion, conduction and rhythm disorders. If so, reduce dose or stop treatment.
– Do not combine with calcium, particularly by IV route (serious arrhythmias).
– Monitor combination with:
  • amiodarone, macrolides, itraconazole, quinine, chloroquine (increased digoxin concentration);
  • potassium-depleting drugs: diuretics, corticoids, amphotericin B (increased risk of digoxin toxicity).
– Monitor if possible serum potassium level in patients taking potassium-depleting drugs and serum creatinine level in patients with renal impairment.
– Do not administer simultaneously with antacids such as aluminium hydroxide, etc., administer 2 hours apart.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– A loading dose may be administered in arrhythmias if a rapid digitalisation is required. It is usually not necessary for heart failure.
– *Storage: below 25°C –*

DIHYDROARTEMISININ/PIPERAQUINE = DHA/PPQ

Prescription under medical supervision

Therapeutic action

– Antimalarial

Indications

– Treatment of uncomplicated falciparum malaria
– Completion treatment following parenteral therapy for severe falciparum malaria

Presentation

– Co-formulated tablets of dihydroartemisinin (DHA)/piperaquine (PPQ), in blister pack, for a complete treatment for one individual
– There are 5 different blister packs:
  • 20 mg DHA/160 mg PPQ tablets blister pack of 3 tablets
  • 40 mg DHA/320 mg PPQ tablets blister pack of 3 tablets
  • 40 mg DHA/320 mg PPQ tablets blister pack of 6 tablets
  • 40 mg DHA/320 mg PPQ tablets blister pack of 9 tablets
  • 40 mg DHA/320 mg PPQ tablets blister pack of 12 tablets

Dosage and duration

– Child 5 to 25 kg: 2.5 to 10 mg/kg/day of DHA + 20 to 32 mg/kg/day of PPQ
– Child over 25 kg and adult: 2 to 10 mg/kg/day of DHA + 16 to 27 mg/kg/day of PPQ

Weight	20 mg/160 mg tablet	40 mg/320 mg tablet	Weight	20 mg/160 mg tablet	40 mg/320 mg tablet
5 to < 8 kg	1 tab	–	25 to < 36 kg	–	2 tab
8 to < 11 kg	1½ tab	–	36 to < 60 kg	–	3 tab
11 to < 17 kg	–	1 tab	60 to < 80 kg	–	4 tab
17 to < 25 kg	–	1½ tab	≥ 80 kg	–	5 tab

– Tablets are to be taken once daily for 3 days.

Contra-indications, adverse effects, precautions

– Do not administer in the event of cardiac disorders (bradycardia, heart rhythm disorders, congestive heart failure).
– Do not combine with drugs that prolong the QT interval (amiodarone, erythromycin, haloperidol, pentamidine, fluconazole, etc.).
– Administer with caution to patients > 60 years or with renal or hepatic impairment.
– May cause: cardiac disorders (QT prolongation, tachycardia); rarely, gastrointestinal disturbances, pruritus, hepatic disorders, joint and muscle pain.
– Monitor combination with: antiretrovirals (increased blood levels of these drugs), enzymes inducers such as rifampicin, carbamazepine, phenytoin, phenobarbital (reduced blood levels of DHA/PPQ).
– If the patient vomits within 30 minutes after administration, re-administer the full dose; if the patient vomits within 30 to 60 minutes, re-administer half the dose.
– *Pregnancy: no contra-indication during the 2nd and 3rd trimester. Safety in the first trimester has not been definitely established. However, given the risks associated with malaria, DHA/PPQ may be used during the first trimester if it is the only effective treatment available.*
– *Breast-feeding: no contraindication*

Remarks

– Take between meals, with a glass of water.
– The tablets may be crushed and mixed with water.
– *Storage: below 25°C* – –

DOXYCYCLINE

Prescription under medical supervision

Therapeutic action

– Cycline antibacterial

Indications

– Cholera, louse-borne and tick-borne relapsing fevers, epidemic typhus and other rickettsioses, bubonic plague, brucellosis (in combination with streptomycin), lymphogranuloma venereum
– Lymphatic filariasis, alternative to ivermectin in onchocerciasis
– *Plasmodium falciparum* malaria prophylaxis
– Alternative to first-line treatments of leptospirosis, treponematosis, atypical pneumonia (*Mycoplasma pneumoniae*, *Chlamydophila pneumoniae*), cervicitis and urethritis due to *Chlamydia trachomatis* (in combination with a treatment for gonorrhoea), donovanosis, syphilis, cutaneous anthrax (no severe form), animal bites (if antibiotic therapy is indicated)

Presentation

– 100 mg tablet

Dosage

– *Louse-borne relapsing fever, epidemic typhus, cholera*
Child under 8 years: 4 mg/kg as a single dose
Child over 8 years: 100 mg as a single dose
Adult: 200 mg (300 mg in cholera) as a single dose
– *Malaria prophylaxis*
Child over 8 years (under 40 kg): 50 mg once daily
Child over 8 years (over 40 kg) and adult: 100 mg once daily
– *Other indications*
Child over 8 years: 100 mg (up to 200 mg in severe infections) once daily or in 2 divided doses
Adult: 200 mg once daily or in 2 divided doses

Duration

– *Tick-borne relapsing fever, animal bites, leptospirosis, rickettsiosis, cervicitis and urethritis due to C. trachomatis*: 7 days; *cutaneous anthrax*: 7-10 days; *bubonic plague*: 10 days; *atypical pneumonia*: 10-14 days; *syphilis, Bejel, Pinta, lymphogranuloma*: 14 days; *filariasis*: minimum 4 weeks; *brucellosis*: 6 weeks; *donovanosis*: until complete healing of lesions; *malaria prophylaxis*: start 24 hours before departure and continue 4 weeks after the return.

Contra-indications, adverse effects, precautions

– Do not administer to patients with allergy to cyclines and to children under 8 years (may damage teeth) except for single dose treatment.
– Administer with caution to patients with hepatic or renal impairment.
– May cause: gastrointestinal disturbances, allergic reactions, photosensitivity (protect exposed skin from sun exposure), oesophageal ulcerations (take tablets during meals with a glass of water in a upright position and more than 1 hour before going to bed).
– Do not give simultaneously with ferrous salts, zinc, calcium, antiacids (aluminium or magnesium hydroxide, etc.): administer 2 hours apart.
– Monitor combination with hepatic enzyme inducers: rifampicin, rifabutin, nevirapine, ritonavir, phenobarbital, phenytoin, carbamazepine, griseofulvin, etc. (reduction of the doxycycline efficacy).
– <u>Pregnancy</u>: **CONTRA-INDICATED** *during the 2nd and 3rd trimester (except for single dose treatment)*
– <u>Breast-feeding</u>: *avoid (risk of infant teeth discoloration)*

Remarks

– Also comes in 50 mg tablets, and 25 mg/5 ml and 50 mg/5 ml oral solutions.
– <u>Storage</u>: *below 25°C* – –

EFAVIRENZ = EFV = EFZ

Prescription under medical supervision

Therapeutic action

– Antiretroviral, HIV-1 non nucleoside reverse transcriptase inhibitor

Indications

– HIV-1 infection, in combination with other antiretroviral drugs

Presentation

– 200 mg breakable tablet, 200 mg capsule and 200 mg and 600 mg tablets

Dosage

– The dose is given once daily at bedtime:

Weight	Capsules or tablets
10 to < 15 kg	200 mg
15 to < 20 kg	250 mg
20 to < 25 kg	300 mg
25 to < 33 kg	350 mg
33 to < 40 kg	400 mg
≥ 40 kg	600 mg

Duration

– Depending on the efficacy and tolerance of efavirenz.

Contra-indications, adverse effects, precautions

– Do not administer to children under 3 years.
– Avoid administration in patients with severe hepatic impairment.
– Administer with caution to patients with psychiatric disorders (or history of) or epilepsy.
– Do not combine with amodiaquine.
– May cause:
  - neurological disorders (dizziness, insomnia, drowsiness, abnormal dreaming, impaired concentration, seizures);
  - psychiatric disorders (severe depression, suicidal ideation);
  - raised liver enzymes (ALAT);
  - skin reactions, possibly severe (Stevens-Johnson syndrome).
– Efavirenz reduces the efficacy of oral contraceptives: use a non-hormonal contraception or injectable medroxyprogesterone or an oral contraceptive containing 50 µg ethinylestradiol per tablet.
– *Pregnancy: avoid; effective contraception must be used during treatment.*

Remarks

– Many fixed-dose combinations containing efavirenz are available.
– *Storage: below 25°C*

ENALAPRIL

Prescription under medical supervision

Therapeutic action

– Antihypertensive, vasodilator (angiotensin-converting enzyme inhibitor)

Indications

– Hypertension
– Congestive heart failure

Presentation

– 2.5 mg, 5 mg and 20 mg tablets

Dosage and duration

– *Hypertension*
  Adult: initially 5 mg once daily, then increase the dose every 1 to 2 weeks, according to blood pressure, up to 10 to 40 mg once daily or in 2 divided doses
  In elderly patients, patients taking a diuretic or patients with renal impairment: start with 2.5 mg once daily as there is a risk of hypotension and/or acute renal impairment.
– *Congestive heart failure*
  Adult: 2.5 mg once daily, then increase the dose over 2 to 4 weeks, up to 10 to 20 mg once daily or in 2 divided doses

Contra-indications, adverse effects, precautions

– Do not administer to patients with history of hypersensitivity to enalapril.
– May cause:
  • hypotension, dry cough at night, hyperkalaemia, headache, dizziness, nausea, renal impairment;
  • allergic reactions, angioedema;
  • rarely: hepatitis, neutropenia and agranulocytosis in immunodeficient patients, anaemia in patients with chronic renal impairment.
– Reduce dosage in patients with renal impairment.
– Do not combine with potassium-sparing diuretics (spironolactone) or potassium.
– Monitor, if possible, serum creatinine and potassium levels (hyperkalaemia is frequent but of no concern if it remains below 5.5 mEq/litre).
– In patients taking a diuretic, reduce the dose of the diuretic when adding enalapril.
– <u>*Pregnancy*</u>: ***CONTRA-INDICATED***
– <u>*Breast-feeding*</u>: *no contra-indication at recommended doses*

Remarks

– Captopril has the same indications as enalapril, however its dosage differs and it must be taken 2 to 3 times daily.
– <u>*Storage*</u>: *below 25°C* –

ERGOCALCIFEROL = VITAMIN D2
COLECALCIFEROL = VITAMIN D3

Prescription under medical supervision

Therapeutic action

– Vitamin necessary for the intestinal absorption of calcium and phosphate and for normal bone calcification

Indications

– Prevention and treatment of vitamin D deficiencies (rickets, osteomalacia)

Presentation

– 1.25 mg tablet or capsule (50 000 IU)
– 250 µg/ml oral suspension (10 000 IU/ml)

Also comes in different strengths, depending on the manufacturers.

Dosage and duration

Ergocalciferol and colecalciferol are used at the same doses:

– *Prevention of vita*min D deficiencies
  • 50 000 IU tablet or capsule:
  Child under 5 years: 100 000 IU every 3 months, during periods of limited sunlight
  Child over 5 years and adult: 100 000 IU every 3 months or 200 000 IU every 6 months
  Pregnant woman: 100 000 IU around the 6th-7th month of pregnancy
  • 10 000 IU/ml oral suspension:
  Child and adult: 400 IU once daily (10 µg daily) during periods of limited sunlight
  For children rarely exposed to sunlight or dark-skinned children, doses may be doubled.
– *Treatment of vitamin D deficiencies*
  Child and adult: 800 to 4000 IU once daily (20 to 100 µg daily) for 6 to 12 weeks, then continue with preventive dose
– Do not exceed 600 000 IU/year.

Contra-indications, adverse effects, precautions

– Do not administer to patients with hypercalcaemia, hypercalciuria, calcic lithiasis.
– Stop treatment if signs of overdosage occur: headache, anorexia, nausea, vomiting, increased thirst, polyuria.
– Avoid combination with thiazide diuretics (hydrochlorothiazide, etc.).
– Monitor, if possible, calcaemia and calciuria during curative treatment.
– Combine with a calcium supplementation at the start of curative treatment (500 mg to 1 g/day).
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication. When curative treatment is being administered to the mother, do not give vitamin D to the child.*

Remarks

– The number of IU per drop of oral solution varies according to manufacturers. Check instructions for use.
– Vitamin D2 and D3 also come in ampoules for oral and/or parenteral use.
– *Storage: below 25°C –*
  Once opened, oral solution keeps 3 months.

ERYTHROMYCIN

Prescription under medical supervision

Therapeutic action

– Macrolide antibacterial

Indications

Erythromycin is an alternative to first-line antibacterials when they are not available or contra-indicated:

– Borreliosis (louse-borne and tick-borne relapsing fevers), non-venereal treponematoses, leptospirosis, conjunctivitis due to *Chlamydia trachomatis*

– Acute otitis media, tonsillitis and sinusitis; diphtheria, pertussis, pneumonia due to *Mycoplasma pneumoniae* and *Chlamydophila pneumoniae*

– Erysipela, impetigo, furuncle, leg ulcer

– Cervicitis and urethritis due to *Chlamydia trachomatis* (in combination with a treatment for gonorrhoea), donovanosis, chancroid, lymphogranuloma venereum, syphilis

– Completion treatment following parenteral therapy with erythromycin

Presentation

– 250 mg and 500 mg tablets

– 125 mg/5 ml powder for oral suspension, to be reconstituted with filtered water

Dosage

– *Louse-borne relapsing fever*
  Child under 5 years: 250 mg as a single dose
  Child over 5 years and adult: 500 mg as a single dose

Age	Weight	125 mg/5 ml susp.	250 mg tablet	500 mg tablet
< 2 months	< 5 kg	½ tsp x 2	¼ tab x 2	–
2 to < 12 months	5 to < 10 kg	1 tsp x 2	½ tab x 2	¼ tab x 2
1 to < 3 years	10 to < 15 kg	2 tsp x 2	1 tab x 2	½ tab x 2
3 to < 8 years	15 to < 25 kg	2 tsp x 3	1 tab x 3	½ tab x 3
8 to < 11 years	25 to < 35 kg	–	2 tab x 2	1 tab x 2
11 to < 13 years	35 to < 45 kg	–	2 tab x 3	1 tab x 3

– *Other indications*
  Child: 30 to 50 mg/kg/day in 2 or 3 divided doses
  Adult: 2 to 3 g/day in 2 or 3 divided doses

Duration

– *Tick-borne relapsing fever, leptospirosis, pertussis, cervicitis and urethritis, chancroid, impetigo, furuncle, leg ulcer*: 7 days; *sinusitis, erysipela*: 7 to 10 days; *tonsillitis, otitis*: 10 days; *atypical pneumonia*:10 to 14 days; *diphtheria, treponematoses, syphilis, lymphogranuloma venereum, donovanosis, conjunctivitis due to C. trachomatis*: 14 days.

Contra-indications, adverse effects, precautions

– Do not administer to patients with allergy to erythromycin or another macrolide.

– Administer with caution to patients with renal impairment (max. 1.5 g/day for adult with severe renal impairment) or hepatic impairment.

– May cause: gastrointestinal disturbances, reversible hearing disorders, heart rhythm disorders (QT prolongation); allergic reactions sometimes severe. In the event of allergic reaction, stop treatment immediately.

– Avoid combination with drugs that prolong the QT interval (amiodarone, chloroquine, co-artemether, fluconazole, haloperidol, mefloquine, moxifloxacin, ondansetron, pentamidine, quinine, etc.).

– Administer with caution and monitor use in patients taking carbamazepine or digoxin (increased their plasma levels).

– Avoid use in neonates less than 2 weeks (risk of pyloric stenosis).

– *Pregnancy and breast-feeding: no contra-indication*

Remarks

– Take tablets preferably one hour before or 2 hours after a meal.

– *Storage: below 25°C –* –
  For the oral suspension (powder or reconstituted suspension): follow manufacturer's instructions.

ETHAMBUTOL = E

Prescription under medical supervision

Therapeutic action

– First line antituberculous antibacterial (bacteriostatic activity)

Indications

– Treatment of tuberculosis, in combination with other antituberculous antibacterials

Presentation

– 100 mg and 400 mg tablets

Dosage

– Child under 30 kg: 20 mg/kg (15 to 25 mg/kg/day) once daily
– Child over 30 kg and adult: 15 mg/kg (15 to 25 mg/kg/day) once daily
– Maximum dose: 1200 mg/day

Duration

– According to protocol

Contra-indications, adverse effects, precautions

– Do not administer to patients with severe renal impairment or pre-existing optic neuritis (e.g. diabetic retinopathy).
– Reduce the dose in patients with renal impairment (15 to 25 mg/kg/dose 3 times per week).
– May cause: retrobulbar optic neuritis. Patients should be warned that they must immediately stop treatment and seek medical attention in the event of visual disturbances such as blurred vision, reduced visual acuity, blind spot (scotoma), green-red colour blindness. Visual alterations are usually reversible a few weeks after stopping ethambutol.
– The dosage must be carefully adjusted to the body weight (adverse effects are dose-dependant), especially for children under 5 years, as it is more difficult to detect visual alterations at this age.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Ethambutol is included in the WHO Group 1 antituberculous agents.
– For patients on first-line antituberculous treatment, ethambutol is given as part of a fixed dose combination (isoniazid+rifampicin+pyrazinamide+ethambutol or isoniazid+ethambutol).
– *Storage: below 25°C –* –

ETHINYLESTRADIOL/LEVONORGESTREL

Prescription under medical supervision

Therapeutic action

- Combined hormonal contraceptive, estrogen-progestogen

Indications

- Oral contraception

Presentation

- 21-day pack: 21 active tablets of 30 micrograms ethinylestradiol + 150 micrograms levonorgestrel
- 28-day pack: 21 active tablets of 30 micrograms ethinylestradiol + 150 micrograms levonorgestrel and 7 inactive tablets

Dosage

- 21-day pack: 1 tablet daily at the same time, for 21 days, followed by a tablet-free interval of 7 days
- 28-day pack: 1 tablet daily at the same time, with no interruption, even during menstruation
  Start the first day of menstruation or immediately after abortion or as of the 21st day after childbirth if the woman does not breastfeed.
  It is also possible to start at any moment of the cycle (if the woman is not pregnant). In this case, contraception will be effective as of the 8th tablet. It is essential to use condoms during the first 7 days.

Duration

- If there are no adverse effects, as long as contraception is desired.

Contra-indications, adverse effects, precautions

- Do not administer to women with breast cancer, uncontrolled hypertension, uncontrolled or complicated diabetes, history of thromboembolic disorders, coronary insufficiency, valvular disease, stroke, severe or recent liver disease, unexplained vaginal bleeding, migraine with neurological signs, renal impairment, hyperlipidaemia, to women smokers over age 35.
- May cause: reduced menstrual flow, vaginal candidiasis, nausea, weight gain, breast tenderness, mood changes, acne and headache. Other rare and severe adverse effects require discontinuation of treatment: hypertension, cardiovascular and thromboembolic disorders, jaundice, migraine, visual disturbances.
- Hepatic enzyme inducers (rifampicin, rifabutin, nevirapine, ritonavir, phenobarbital, phenytoin, carbamazepine, griseofulvin, etc.) reduce the contraceptive efficacy. Use a non-hormonal contraceptive method (copper intrauterine device, condoms) or injectable medroxyprogesterone, or as a last resort an oral contraceptive containing 50 micrograms ethinylestradiol (however there is a risk of contraceptive failure and risk of adverse effects is increased).
- Clinical examinations must be carried out before (blood pressure, breasts) and during treatment (blood pressure).
- *Pregnancy*: **CONTRA-INDICATED**
- *Breast-feeding*: **CONTRA-INDICATED** *before 6 weeks; not recommended between 6 weeks and 6 months (except if it is the only available or acceptable contraceptive method); no contra-indication after 6 months.*

Remarks

- If a woman misses an active tablet, she should take it as soon as possible and continue treatment as normal. If she misses by over 12 hours, contraceptive protection will be lessened. It is therefore recommended to use an additional contraceptive method: condoms for 7 days and, if she has had sexual intercourse within 5 days before forgetting the tablet, emergency contraception.
- 28-day packs can simplify use as there is no interruption between two packs. Explain to the woman which are active and inactive tablets. She must be careful not to start with inactive tablets.
- *Storage: below 25°C*

FERROUS salts

Therapeutic action

– Antianaemia drug

Indications

– Prevention and treatment of iron-deficiency anaemia

Presentation

– 200 mg ferrous sulfate tablet containing 65 mg of elemental iron

Also comes in syrup and in different compositions and strengths.

Dosage (expressed in elemental iron)

– *Prevention of iron-deficiency anaemia*
  Child under 5 years: 15 to 30 mg once daily = ¼ to ½ tab/day
  Child over 5 years: 30 mg once daily = ½ tab/day
  Pregnant woman: 60 mg once daily = 1 tab/day
– *Treatment of iron-deficiency anaemia*
  Child under 2 years: 30 mg once daily = ½ tab/day
  Child from 2 to 12 years: 60 mg once daily = 1 tab/day
  Adult: 120 to 180 mg/day in 2 to 3 divided doses = 2 to 3 tab/day
– Do not exceed indicated doses.

Duration

– *Prevention*: during risk period (pregnancy, malnutrition)
– *Treatment*: 3 months

Contra-indications, adverse effects, precautions

– Do not administer to patients with sickle-cell anaemia.
– May cause: gastrointestinal disturbances (epigastric pain, diarrhoea or constipation, black stools).
– Do not exceed recommended doses, especially in children.
– Toxic dose: 30 mg/kg of elemental iron (100 mg/kg of ferrous sulfate).
– Signs of overdose: bloody diarrhoea, heart failure.
– Absorption of both ferrous salts and doxycycline or antacids is decreased when they are given concomitantly. Administer each drug at least 2 hours apart.
– Do not administer simultaneously with doxyccline or antacids: administer 2 hours apart.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Take during meals to reduce gastrointestinal disturbances.
– For treatment, preferably use tablets containing both ferrous salts and folic acid.
– Other ferrous salts may be used. Ensure the dose of elemental iron is the same as that indicated above (200 mg ferrous fumarate = 65 mg elemental iron; 300 mg ferrous gluconate = 35 mg elemental iron).
– *Storage: below 25°C*

FLUCONAZOLE

Prescription under medical supervision

Therapeutic action

– Antifungal

Indications

– Oesophageal candidiasis
– Moderate to severe oropharyngeal candidiasis
– Secondary prophylaxis of recurrent candidiasis in immunocompromised patients
– Cryptococcocal meningitis, after treatment with amphotericin B + flucytosine or in combination with amphotericin B
– Secondary prophylaxis of cryptococcocal infections

Presentation

– 50 mg, 100 mg and 200 mg capsules or tablets
– 50 mg/5 ml oral solution

Dosage and duration

– *Oesophageal candidiasis, oropharyngeal candidiasis, secondary prophylaxis of candidiasis*
Child over 1 week: 3 to 6 mg/kg once daily
Adult: 50 to 200 mg once daily
These doses may be increased up to 400 mg/day if necessary. The treatment lasts 14 to 21 days for oesophageal candidiasis; 7 to 14 days for oropharyngeal candidiasis; as long as required for secondary prophylaxis.

– *Cryptococcocal meningitis*

After treatment with amphotericin B + flucytosine	Child > 1 week	6 to 12 mg/kg once daily (max. 800 mg/day) for 8 weeks
	Adult	400 to 800 mg once daily for 8 weeks
or		
In combination with amphotericin B	Child > 1 week	12 mg/kg once daily (max. 800 mg/day) for 2 weeks (with amphotericin B) then 6 to 12 mg/kg once daily for 8 weeks
	Adult	800 mg once daily for 2 weeks (with amphotericin B) then 400 to 800 mg once daily for 8 weeks

– *Secondary prophylaxis of cryptococcocal infections*
Child: 6 mg/kg once daily (max. 200 mg/day), as long as required
Adult: 200 mg once daily, as long as required

Contra-indications, adverse effects, precautions

– Administer with caution to patients with hepatic or renal impairment, cardiac disorders (bradycardia, heart rhythm disorders, etc.). Reduce the dose by half in patients with renal impairment.
– May cause: gastrointestinal disturbances, headache, skin reactions sometimes severe, anaphylactic reactions; severe hepatic disorders, haematologic (leukopenia, thrombocytopenia) and cardiac disorders (QT-prolongation). Stop treatment in the event of anaphylactic reaction, hepatic disorders or severe skin reaction.
– In the event of prolonged treatment, monitor hepatic function.
– Do not administer simultaneously with rifampicin, administer 12 hours apart (rifampicin in the morning, fluconazole in the evening).
– Avoid or monitor combination with:
  • drugs that prolong the QT interval (amiodarone, chloroquine, erythromycin, haloperidol, mefloquine, pentamidine, quinine);
  • warfarin, carbamazepine, phenytoin, rifabutin, benzodiazepines, calcium-channel blockers, certain antiretrovirals (e.g. nevirapine, saquinavir, zidovudine): increased blood concentration of these drugs.
– *Pregnancy and breast-feeding: to be used only in severe or life-threatening infections, particularly during the first trimester of pregnancy (risk of foetal malformations).*

Remarks

– For cryptococcocal meningitis, when amphotericin B is not available or not tolerated, fluconazole may be administered alone:
  Child over 1 week: 12 mg/kg once daily (max. 1200 mg/d) for 2 weeks then, 12 mg/kg once daily (max. 800 mg/d) for 8 weeks
  Adult: 1200 mg once daily for 2 weeks then, 800 mg once daily for 8 weeks
– For the treatment of histoplasmosis, fluconazole is less effective than itraconazole. It should be used (child: 10 to 12 mg/kg once daily, max. 400 mg/d ; adult: 400 mg on Day 1 then 200 to 400 mg once daily, for 6 to 12 weeks) only in patients unable to tolerate itraconazole.
– For the treatment of dermatophytosis of the scalp, fluconazole may be used as a secondary option (child: 6 mg/kg once daily, max. 200 mg/d; adult: 200 mg once daily, for 2 to 4 weeks) but itraconazole is preferred for this indication.
– For the treatment of genital candidiasis (vulvovaginitis, balanitis), fluconazole is only used if local treatment fails: 150 mg as a single dose in adults.
– *Storage: below 25°C –*
  Once reconstituted, oral solution keeps for 2 weeks.

FLUCYTOSINE

Prescription under medical supervision

Therapeutic action

– Antifungal

Indications

– Cryptococcocal meningitis (induction phase), in combination with amphotericin B

Presentation

– 500 mg capsule

Also comes in 250 mg capsule and 500 mg tablet.

Dosage and duration

– Child over 1 week and adult: 100 mg/kg/day in 4 divided doses for 2 weeks, in combination with amphotericin B

Contra-indications, adverse effects, precautions

– Administer with caution and monitor use in patients > 60 years or with renal impairment or haematological disorders.
– Reduce the dose by half (50 mg/kg/day in 2 divided doses) in patients with renal impairment.
– May cause: gastrointestinal disturbances, haematological disorders (leukopenia, thrombocytopenia, less frequently, agranulocytosis), increase in transaminase levels, allergic reactions sometimes severe; sometimes, confusion and hallucinations.
– Monitor blood count and liver and renal function until the end of treatment.
– *Pregnancy and breast-feeding: flucytosine is generally not recommended. It is teratogenic in animals and its safety in pregnant or lactating women has not been established. However, taking into account the severity of the disease, the potential benefit of treatment for the mother and in the absence of a safer alternative, it may be used despite the potential risks for the child.*

Remarks

– If amphotericin B is not available, flucytosine may be used at the same dose in combination with fluconazole.
– For children, tablets may be crushed.
– *Storage: below 25°C*

FLUOXETINE



Prescription under medical supervision

Therapeutic action

– Antidepressant, selective serotonin re-uptake inhibitor (SSRI)

Indications

– Major depression

Presentation

– 20 mg capsule

Dosage

– Adult: 20 mg once daily in the morning
– Administer 20 mg on alternate days to patients with hepatic impairment or severe renal impairment.

Duration

– 6 months minimum. The treatment should be discontinued gradually (20 mg on alternate days for 2 weeks). If signs of relapse occur, increase the dose.

Contra-indications, adverse effects, precautions

– Administer with caution and monitor use in patients with epilepsy, diabetes, history of gastrointestinal bleeding or bipolar disorders.
– May cause:
  • allergic reactions (rare): stop treatment;
  • insomnia or drowsiness (caution when driving/operating machinery), gastrointestinal disturbances (take during a meal), headache, dizziness, blurred vision;
  • psychic disorders: exacerbation of anxiety, possibility of a suicide attempt at the beginning of therapy, manic episode during the course treatment;
  • withdrawal symptoms (dizziness, paresthesia, nightmares, etc.) possible if the treatment is discontinued abruptly.
– Do not combine with another antidepressant.
– Monitor combination (up to 5 weeks after the discontinuation of fluoxetine) with: carbamazepine, haloperidol, risperidone, phenytoin (increases they toxicity), drugs which lower the seizure threshold (antispychotics, mefloquine, tramadol, etc.), lithium and other serotonergics.
– Avoid aspirin and NSAIDs (risk of bleeding) and alcohol during treatment.
– *Pregnancy: re-evaluate whether the treatment is still necessary; if it is continued, observe the newborn infant if the mother was under treatment in the 3rd trimester (risk of irritability, tremors, hypotony, sleeping disorders, etc.).*
– *Breast-feeding: avoid. Prefer paroxetine or amitriptyline.*

Remarks

– Do not open the capsules.
– The antidepressant effect is not immediate. It is necessary to wait 3 weeks before assessing therapeutic efficacy. This must be explained to the patient.
– In case of insufficient response after 4 weeks, dosage may be increased to 40 mg/day, except in patients with hepatic impairment or severe renal impairment.
– In elderly patients, SSRI are preferred to tricyclics (less contraindications, less adverse effects).
– *Storage: below 25°C*

FOLIC acid = VITAMIN B9

Prescription under medical supervision

Therapeutic action

– Antianaemia drug

Indications

– Treatment of folate-deficient megaloblastic anaemias: severe malnutrition, repeated attacks of malaria, intestinal parasitosis, etc.

Presentation

– 5 mg tablet

Dosage and duration

– Child under 1 year: 0.5 mg/kg once daily for 4 months
– Child over 1 year and adult: 5 mg once daily for 4 months; 15 mg once daily in malabsorption states

Contra-indications, adverse effects, precautions

– Do not combine with sulfadiazine-pyrimethamine in patients with toxoplasmosis nor sulfadoxine-pyrimethamine in patients with malaria: folic acid reduces the efficacy of these treatments.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Folic acid must not be used for the treatment of anaemia due to antifolates (pyrimethamine, trimethoprim or methotrexate). Use folinic acid.
– Folic acid is also used for primary and secondary prophylaxis of neural tube defects and for prophylaxis of acute anaemia in patients with sickle-cell anaemia.
– *Storage: below 25°C –*

FERROUS salts/FOLIC acid

Indications

– Prevention of iron and folic acid deficiency, mainly during pregnancy
– Treatment of iron deficiency

Presentation

– Tablet of 200 mg ferrous sulfate (65 mg of elemental iron) + 400 µg folic acid

Dosage

– See ferrous salts

Remarks

– This fixed-dose combination is not effective for the treatment of folic acid deficiency because of its low dose.
– *Storage: below 25°C –*

FOSFOMYCIN TROMETAMOL

Prescription under medical supervision

Therapeutic action

– Phosphonic acid antibacterial

Indications

– Acute uncomplicated cystitis in women, without fever nor flank pain
– Asymptomatic bacteriuria in pregnant women

Presentation

– Granules for oral solution in 3 g sachet, to be dissolved in filtered water

Dosage and duration

– 3 g as a single dose

Contra-indications, adverse effects, precautions

– Do not administer to patients with severe renal impairment, allergy to fosfomycin.
– May cause: gastrointestinal disturbances, skin rash; rarely, allergic reactions.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– In the treatment of cystitis, symptoms should improve within 3 days of treatment. If not, the patient should consult again. Treatment failure may be due to the presence of naturally fosfomycin-resistant organisms (*Staphylococcus saprophyticus*).
– Take between meals or at bedtime (food decreases absorption).
– Fosfomycin is not included in the WHO list of essential medicines.
– *Storage: below 25*°C – –

FUROSEMIDE

Prescription under medical supervision

Therapeutic action

- Diuretic

Indications

- Oedema caused by renal, hepatic or congestive heart failure
- Hypertension (prefer hydrochlorothiazide for this indication)

Presentation

- 20 mg and 40 mg tablets

Dosage

- Child: 1 to 2 mg/kg once daily
- Adult: 20 to 40 mg once daily
- Reduce doses according to clinical response.
- In case of persistant oedema: 80 to 150 mg once or in 2 divided doses, then reduce dosage.

Duration

- According to clinical response

Contra-indications, adverse effects, precautions

- Do not administer for other types of oedema, especially those due to kwashiorkor.
- May cause:
  - hypokalaemia (especially in case of cirrhosis), poor nutritional status, congestive heart failure (furosemide enhances toxicity of digoxin);
  - dehydration and orthostatic hypotension.
- *Pregnancy: avoid; do not use for hypertension in pregnancy.*
- *Breast-feeding: avoid (excreted in milk and may reduce milk production)*

Remarks

- Give in the morning.
- A lot of fruit should be eaten during treatment (dates, bananas, mangos, oranges, etc.) in order to supply additional potassium. Use potassium tablets as well if available.
- *Storage: below 25°C –*

GLIBENCLAMIDE



Prescription under medical supervision

Therapeutic action

– Sulphonylurea hypoglycaemic which stimulates secretion of pancreatic insulin

Indications

– Adult-onset diabetes, insulin-independent and not controlled by well followed diet
  Measurement of blood glucose levels is essential in establishing diagnosis and control of the disease process.

Presentation

– 2.5 mg and 5 mg tablets

Also comes in 1.25 mg tablet.

Dosage

– Adult: initially, 2.5 to 5 mg once daily in the morning
  Adjust dosage until diabetic control is obtained; maximum dose: 15 mg/day.
  Adjust dosage gradually and very cautiously for elderly patients.

Duration

– According to clinical response and laboratory tests

Contra-indications, adverse effects, precautions

– Do not administer if:
  • insulin-dependent diabetes, juvenile diabetes mellitus;
  • severe renal or hepatic function impairment; allergy to sulphonamides.
– May cause:
  • hypoglycaemia due to excessive doses, especially in elderly patients; insufficient intake of sugar; hepatic or renal failure. Treat mild hypoglycaemia with intake of oral sugar and IV injection of hypertonic glucose solution if severe; adjust dosage;
  • allergic reactions.
– Avoid combination with: co-trimoxazole, aspirin and other anti-inflammatory drugs, beta-blockers (risk of hypoglycaemia), barbiturates, glucocorticoids, oral contraceptives (antagonise hypoglycaemic effect), etc.
– Avoid combination with alcohol: antabuse reaction.
– <u>*Pregnancy*</u>*: **CONTRA-INDICATED** during the third trimester*
– <u>*Breast-feeding*</u>*: **CONTRA-INDICATED***

Remarks

– Use only when diabetes cannot be controlled with diet alone, and monitor blood-glucose levels regularly.
– Use of oral antidiabetics does not mean dietetic measures should be cancelled.
– Insulin may be required in patients having surgery.
– Chlorpropamide is a long-acting sulphonylurea hypoglycaemic used at doses of 125 to 250 mg once daily. Risk of hypoglycaemia is higher than with other antidiabetics.
– <u>*Storage*</u>*: below 25°C –*

GLYCERYL TRINITRATE = NITROGLYCERIN = TRINITRIN

Prescription under medical supervision

Therapeutic action

– Vasodilator, antianginal

Indications

– Short-term prophylaxis and treatment of angina

Presentation

– 0.5 mg sublingual tablet

Dosage

– *Short-term prophylaxis of acute angina (sublingually)*
  Adult: 0.5 to 1 mg taken 5 to 10 minutes before a precipitating event (exercise, stress, etc.)
– *Treatment of acute angina (sublingually)*
  Adult: 0.5 to 1 mg, to be repeated 1 to 3 times at 3-4 minute intervals
  Maximum dose: 3 mg/day

Duration

– According to clinical response

Contra-indications, adverse effects, precautions

– Do not administer to patients with obstructive cardiomyopathy, hypotension, shock.
– May cause: orthostatic hypotension (especially in elderly patients), headache, nausea, flushing of the face, haemolysis in patients with G6PD deficiency, severe hypotension with risk of circulatory collapse in the event of overdose.
– Use the lowest effective dose in patients taking another nitrate derivative, a vasodilator or an antihypertensive drug and in elderly patients.
– Combination with antihypertensive drugs, diuretics, vasodilators and alcohol enhances hypotensive effects.
– Do not combine with sildenafil (risk of acute coronary syndrome).
– *Pregnancy: not recommended (safety is not established)*
– *Breast-feeding: not recommended (safety is not established)*

Remarks

– Tablet must be crunched first, then slowly dissolved under the tongue.
– Antianginal effect appears within less than 5 minutes and persists for less than 1 hour.
– Sustained-release formulations are used for the long-term management of angina and the treatment of congestive heart failure.
– *Storage: below 25°C, preferably in airtight glass container* – –

GRISEOFULVIN

Prescription under medical supervision

Therapeutic action

– Antifungal

Indications

– Dermatophyte infections of the scalp (scalp ringworm)
– Dermatophyte infections of the skin and folds, in the event of extended lesions or if the topical treatment has failed

Presentation

– 125 mg and 500 mg tablets

Also comes in 250 mg tablet and 125 mg/5 ml oral solution.

Dosage

– Child 1 to 12 years: 10 to 20 mg/kg once daily or in 2 divided doses, during meals (max. 500 mg/day)
– Child over 12 years and adult: 500 mg to 1 g once daily or in 2 divided doses, during meals (max. 1 g/day)

Age	Weight	125 mg/5 ml susp.	125 mg tablet	500 mg tablet
1 to < 2 years	10 to < 13 kg	5 ml	1 tab	¼ tab
2 to < 7 years	13 to < 24 kg	10 ml	2 tab	½ tab
7 to < 12 years	24 to < 35 kg	–	4 tab	1 tab
≥ 12 years and adult	≥ 35 kg	–	4 to 8 tab	1 to 2 tab

Duration

– *Scalp*: 6 weeks on average
– *Skin and folds*: 4 to 6 weeks

Contra-indications, adverse effects, precautions

– Do not administer to patients with hepatic impairment, lupus erythematous, porphyria (may trigger attacks of acute porphyria).
– May cause: gastrointestinal disturbances, headache, skin reactions (eruption, urticaria, etc.); photosensitivity (protect exposed skin from sun exposure).
– Monitor patients taking warfarin (anticoagulant effect decreased).
– Avoid alcohol during treatment (antabuse effect).
– *Pregnancy and breast-feeding*: ***CONTRA-INDICATED****. Apply a topical treatment (miconazole 2% cream or Whitfield ointment) in order to limit the lesions until it is possible to use griseofulvin.*

Remarks

– For young children, if the oral solution is not available, crush the tablet and mix it with a liquid.
– *Storage: below 25°C*

HALOPERIDOL



Prescription under medical supervision

Therapeutic action

– Antipsychotic (neuroleptic)

Indications

– Acute or chronic psychosis
– Severe anxiety not controlled by benzodiazepines

Presentation

– 5 mg tablet
– 2 mg/ml oral solution (1 ml = 20 drops)

Also comes in 0.5 and 2 mg tablets.

Dosage

– *Acute or chronic psychosis*
  Adult: 2 to 10 mg/day in 2 divided doses. If necessary, these doses may be gradually increased up to 20 mg/day according to clinical response. Once the patient is stable, the maintenance dose is administered once daily in the evening.
– *Severe anxiety not controlled by benzodiazepines*
  Adult: 1 mg/day (10 drops/day) in 2 divided doses
– Whatever the indication, reduce the dose by half in elderly patients.
– Use the lowest effective dose, especially in the event of prolonged treatment.

Duration

– *Acute psychosis*: minimum 3 months; *chronic psychosis*: minimum one year. The treatment should be discontinued gradually (over 4 weeks). If signs of relapse occur, increase the dose.
– *Severe anxiety*: maximum 4 weeks.

Contra-indications, adverse effects, precautions

– Do not administer to patients with cardiac disorders (cardiac failure, recent myocardial infarction, conduction disorders, bradycardia, etc.); to elderly patients with dementia (e.g. Alzheimer's disease).
– Administer with caution and carefully monitor use in patients > 60 years and patients with hypokalaemia, hyperthyroidism, renal or hepatic impairment, Parkinson's disease.
– May cause: drowsiness (caution when driving/operating machinery), extrapyramidal syndrome, early and tardive dyskinesia, sexual dysfunction, QT-prolongation, ventricular arrhythmia, orthostatic hypotension; neuroleptic malignant syndrome (unexplained hyperthermia with neuromuscular disorders), rare but requiring immediate treatment discontinuation.
– In the event of extrapyramidal symptoms, combine with biperiden.
– Avoid combination with: carbamazepine, rifampicin, fluoxetine, lithium, drugs that prolong the QT interval (amiodarone, chloroquine, erythromycin, fluconazole, mefloquine, pentamidine, quinine).
– Avoid alcohol during treatment.
– *<u>Pregnancy</u>: re-evaluate whether the treatment is still necessary; if it is continued, monitor the newborn infant for reversible extrapyramidal effects (tremors) if the mother was under high dose treatment in the 3rd trimester.*
– *<u>Breast-feeding</u>: avoid; if absolutely necessary, administer less than 5 mg/day.*

Remarks

– Haloperidol produces less orthostatic hypotension than chlorpromazine and has little anticholinergic effects. It is less sedative than chlorpromazine but produces more extrapyramidal symptoms.
– *<u>Storage</u>: below 25°C*

HYDROCHLOROTHIAZIDE

Prescription under medical supervision

Therapeutic action

– Diuretic

Indications

– Moderate or severe hypertension
– Oedema caused by renal, hepatic or congestive heart failure

Presentation

– 50 mg tablet

Also comes in 25 mg tablet.

Dosage

– *Hypertension*
  Adult: 25 to 50 mg/day in 2 divided doses
– *Oedema*
  Child: 1 mg/kg/day in 2 divided doses
  Adult: 50 to 100 mg in the morning, on alternate days

Duration

– According to clinical response

Contra-indications, adverse effects, precautions

– Do not administer if severe renal failure, allergy to sulphonamides; for other types of oedema, especially those due to kwashiorkor.
– May cause: dehydration, hypotension, hypokalaemia, photosensitivity, hyperglycaemia.
– *Pregnancy*: ***CONTRA-INDICATED***
– *Breast-feeding*: ***CONTRA-INDICATED***

Remarks

– Often used in combination with an antihypertensive drug.
– A lot of fruit should be eaten during treatment (dates, bananas, mangos, oranges, etc.), in order to supply additional potassium. Use potassium tablets as well if available.
– *Storage*: *below 25°C –*

HYOSCINE BUTYLBROMIDE = BUTYLSCOPOLAMINE

Prescription under medical supervision

Therapeutic action

– Antispasmodic

Indications

– Spasms of the gastrointestinal tract and genitourinary tract

Presentation

– 10 mg tablet

Dosage

– Child from 6 years to 12 years: 10 mg to be repeated up to 3 times per day if necessary
– Adult: 10 to 20 mg to be repeated up to 3 or 4 times per day if necessary

Duration

– According to clinical response; no prolonged treatment.

Contra-indications, adverse effects, precautions

– Do not administer tablets to children under 6 years (use injectable hyoscine butylbromide).
– Do not administer to patients with urethro-prostatic disorders, cardiac disorders, glaucoma.
– Do not administer to children with high fever.
– May cause: urinary retention, dryness of the mouth, constipation, blurred vision, tachycardia.
– Administer with caution and under close supervision to patients taking other anticholinergic drugs (antidepressants, neuroleptics, H-1 antihistamines, antiparkinsonians, etc.).
– *Pregnancy: no contra-indication;* NO PROLONGED TREATMENT
– *Breast-feeding: no contra-indication;* NO PROLONGED TREATMENT

Remarks

– Other antispasmodics are used in certain countries:
  • atropine (child: 0.01 mg/kg every 4 to 6 hours, without exceeding 0.4 mg/day; adult: 0.4 to 0.6 mg every 4 to 6 hours)
  • propantheline (adult: 45 to 120 mg/day in 3 divided doses)
– Antispasmodic drugs are not included in the WHO list of essential medicines.
– *Storage: below 25°C –*

IBUPROFEN

Prescription under medical supervision

Therapeutic action

– Analgesic, antipyretic, non-steroidal anti-inflammatory (NSAID)

Indications

– Mild to moderate pain, fever, rheumatic diseases

Presentation

– 200 mg and 400 mg enteric-coated tablets
– 100 mg/5 ml oral suspension, with pipette graduated per kg of body weight (each kg graduation corresponds to 10 mg ibuprofen)

Dosage

– *Pain, fever*
Child over 3 months: 30 mg/kg/day in 3 divided doses (= one pipette filled up to the graduation corresponding to the child's weight, 3 times per day)
Adult: 1200 to 1800 mg/day in 3 to 4 divided doses
In post-operative period, ibuprofen should be given on a regular basis, every 8 hours, rather than "as needed".

Age	Weight	100 mg/5 ml susp.	200 mg tablet	400 mg tablet
3 months to < 6 years	5 to < 20 kg	Use the graduated pipette	–	–
6 to < 12 years	20 to < 40 kg	–	1 to 2 tab x 3	–
≥ 12 years and adult	≥ 40 kg	–	2 tab x 3 or 4	1 tab x 3 or 4

– *Rheumatoid arthritis*
Child: up to 40 mg/kg/day maximum
Adult: up to 3200 mg/day maximum

Duration

– According to clinical response; *post-operative pain*: 8 days maximum

Contra-indications, adverse effects, precautions

– Do not administer to children under 3 months, patients with allergy to NSAID, peptic ulcer, coagulation defects, haemorrhage, surgery with risk of major blood loss, severe renal or hepatic impairment, severe heart failure, severe malnutrition, uncorrected dehydration or hypovolaemia, severe infection.
– May cause: allergic reactions, epigastric pain, peptic ulcer, haemorrhage, renal impairment.
– Administer with caution to elderly or asthmatic patients.
– Do not combine with: methotrexate, anticoagulants and other NSAIDs.
– Monitor combination with diuretics and angiotensin-converting enzyme inhibitors (drink plenty of fluids to avoid renal failure).
– *Pregnancy: not recommended during the first 5 months.* ***CONTRA-INDICATED*** *from the beginning of the 6th month (use paracetamol).*
– *Breast-feeding: no contra-indication (short term treatment)*

Remarks

– Take with meals.
– Clean the graduated pipette after use. Shake the bottle before use.
– If ibuprofen alone does not provide pain relief, combine with paracetamol and/or an opioid analgesic.
– *Storage: below 25°C* – –
Once opened, oral suspension must be stored between 8°C and 15°C.

IODIZED OIL

Therapeutic action

– Iodine supplementation

Indications

– Prevention and treatment of severe iodine deficiency

Presentation

– 200 mg capsule

Dosage and duration

– Child under 1 year: 200 mg (1 capsule) once a year
– Child from 1 to 5 years: 400 mg (2 capsules) once a year
– Child from 6 to 15 years: 600 mg (3 capsules) once a year
– Pregnant woman or women of childbearing age: 400 mg (2 capsules) once a year

Contra-indications, adverse effects, precautions

– Do not administer to patients with allergy to iodine or hyperthyroidism.
– Do not administer to patients over 45 years.
– May cause: allergic reactions, dysthyroidism.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Also comes in 10 ml ampoule containing 480 mg/ml to be administered orally or by IM injection using a glass syringe:
  • children under 1 year: 0.5 ml
  • children from 1 to 15 years, pregnant women or women of childbearing age: 1 ml
– *Storage: below 25°C –*

ISONIAZID = H

Prescription under medical supervision

Therapeutic action

– First line antituberculous antibacterial (bactericidal activity)

Indications

– Treatment of tuberculosis, in combination with other antituberculous antibacterials
– Prophylaxis of tuberculosis

Presentation

– 100 mg and 300 mg tablets
– 50 mg/5 ml oral solution

Dosage

– Child under 30 kg: 10 mg/kg (7 to 15 mg/kg/day) once daily, on an empty stomach
– Child over 30 kg and adult: 5 mg/kg (4 to 6 mg/kg/day) once daily, on an empty stomach
– Maximum dose: 300 mg/day

Duration

– According to protocol

Contra-indications, adverse effects, precautions

– Do not administer to patients with severe hepatic impairment.
– May cause:
  • peripheral neuropathy, especially in malnourished, alcoholic, diabetic, HIV-infected patients; pregnant and breast-feeding women; patients with renal impairment or chronic hepatic disease and patients receiving high doses of isoniazid;
  • hepatic disorders (jaundice), especially in alcoholic patients, patients receiving rifampicin, patients > 35 years;
  • hypersensitivity reactions, psychotic reactions.
– If signs of hepatotoxicity (e.g. jaundice) develop, isoniazid should be discontinued until symptoms resolve.
– Administer with caution and closely monitor patients taking phenytoin, carbamazepine, benzodiazepines (risk of toxicity), warfarin (risk of bleeding), cycloserine (increased risk of peripheral neuropathy).
– Administer pyridoxine (vitamin B6) in patients at risk of peripheral neuropathy (child: 5 mg/day; adult: 10 mg/day).
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication; supplement the infant with pyridoxine (5 mg/day).*

Remarks

– Isoniazid is included in the WHO Group 1 antituberculous agents. However, when used at high doses (child: 20 mg/kg/day; adult: 16 to 20 mg/kg/day), it is included in the Group 5.
– Prophylactic treatment should be considered only after excluding active tuberculosis.
– For patients on first-line antituberculous treatment, isoniazid is given as part of a fixed dose combination (isoniazid+rifampicin+pyrazinamide+ethambutol or isoniazid+rifampicin+pyrazinamide or isoniazid +rifampicin).
– *Storage: below 25°C* – –

ISOSORBIDE DINITRATE

Prescription under medical supervision

Therapeutic action

– Vasodilator, antianginal

Indications

– Prophylaxis and treatment of acute angina
– Adjunctive therapy in left congestive heart failure

Presentation

– 5 mg tablet

Dosage

– *Short-term prophylaxis of acute angina* (sublingually)
  Adult: 5 to 10 mg taken 10 minutes before a precipitating event (exercise, stress, etc.)
– *Long-term prophylaxis of angina and treatment of heart failure* (orally)
  Adult: 30 to 120 mg/day in 2 to 3 divided doses
  Gradually increase the dose until effective. Do not stop treatment abruptly.
– *Treatment of acute angina* (sublingually)
  Adult: 5 to 10 mg, to be repeated after 10 minutes if necessary

Duration

– According to clinical response

Contra-indications, adverse effects, precautions

– Do not administer to patients with obstructive cardiomyopathy, hypotension, shock.
– May cause: orthostatic hypotension (especially in elderly patients), headache, nausea, flushing of the face, haemolysis in patients with G6PD deficiency, severe hypotension with risk of circulatory collapse in the event of overdose.
– Use the lowest effective dose in patients taking another nitrate derivative, a vasodilator or an antihypertensive drug and in elderly patients.
– Combination with antihypertensive drugs, diuretics, vasodilators and alcohol enhances hypotensive effects.
– Do not combine with sildenafil (risk of acute coronary syndrome).
– *Pregnancy: not recommended (safety is not established*)
– *Breast-feeding: not recommended (safety is not established)*

Remarks

– Sublingual tablet must be crunched first, then slowly dissolved under the tongue. Oral tablet must be swallowed whole.
– By sublingual route, antianginal effect appears within less than 10 minutes and persists for 1 to 2 hours.
– Sustained-release formulations are used for the long-term management of angina and the treatment of congestive heart failure. The time interval between each administration depends on the preparations.
– *Storage: below 25°C* – –

ITRACONAZOLE

Prescription under medical supervision

Therapeutic action

– Antifungal

Indications

– Histoplasmosis and penicilliosis: treatment and secondary prophylaxis
– Dermatophytosis of the scalp (*Tinea capitis*)

Presentation

– 100 mg capsule

Also comes in 50 mg/5 ml oral solution.

Dosage and duration

– *Histoplasmosis (moderate symptoms)*
  Child: 5 mg/kg once daily for 6 to 12 weeks
  Adult: 600 mg/day in 3 divided doses for 3 days then 200 mg once daily or 400 mg/day in 2 divided doses for 6 to 12 weeks
– *Histoplasmosis (severe symptoms, disseminated form)*
  Same treatment for 12 weeks, preceded by one to 2 weeks of treatment with amphotericin B
– *Penicilliosis (moderate symptoms)*
  Adult: 400 mg/day in 2 divided doses for 8 weeks
– *Penicilliosis (severe symptoms)*
  Same treatment for 10 weeks, preceded by 2 weeks of treatment with amphotericin B
– *Secondary prophylaxis of histoplasmosis and penicilliosis*
  Adult: 200 mg once daily as long as required
– *Dermatophytosis of the scalp*
  Child: 3 to 5 mg/kg once daily for 4 weeks
  Adult: 200 mg once daily for 2 to 4 weeks

Contra-indications, adverse effects, precautions

– Administer with caution and monitor use in patients > 60 years or with hepatic or renal impairment or congestive heart failure.
– May cause: gastrointestinal disturbances, headache, skin reactions sometimes severe, anaphylactic reaction, hepatic disorders sometimes severe, paraesthesia, oedema, cardiac failure. Stop treatment in the event of anaphylactic reaction, hepatic disorders or severe skin reaction.
– In case of prolonged treatment, monitor liver function.
– Do not combine with quinidine (risk of arrhythmia).
– Avoid or monitor combination with amiodarone, calcium-channel blockers, benzodiazepines, certain antiretrovirals (e.g. indinavir, ritonavir, saquinavir), corticosteroids (dexamethasone, prednisolone), warfarin, carbamazepine, digoxin: increased blood concentration of these drugs.
– Efficacy of itraconazole may be reduced when combined with: rifampicin, rifabutin, isoniazid, efavirenz, phenytoin, phenobarbital.
– Do not administer simultaneously with aluminium or magnesium hydroxide: administer 2 hours apart.
– *<u>Pregnancy and breast-feeding</u>: avoid; for histoplasmosis, amphotericin B alone for 4 to 6 weeks is an alternative in pregnant women. Do not administer in the event of dermatophytosis of the scalp (apply a topical treatment until it is possible to use itraconazole).*

Remarks

– Do not open the capsules; take with meals.
– *<u>Storage</u>: below 25°C*

IVERMECTIN

Prescription under medical supervision

Therapeutic action

– Anthelminthic, scabicide

Indications

– Onchocerciasis
– Scabies

Presentation

– 3 mg and 6 mg tablets

Dosage and duration

– *Onchocerciasis*
Child over 15 kg and adult: 150 µg/kg as a single dose. A 2nd dose should be administered after 3 months if clinical signs persist. Repeat the treatment every 6 or 12 months to maintain the parasite load below the threshold at which clinical signs appear.

Height Weight	0 to < 90 cm < 15 kg	90 to < 120 cm 15 to < 25 kg	120 to < 140 cm 25 to < 45 kg	140 to < 160 cm 45 to < 65 kg	≥ 160 cm ≥ 65 kg
3 mg tablet	Do not administer	1 tab	2 tab	3 tab	4 tab
6 mg tablet		½ tab	1 tab	1½ tab	2 tab

– *Ordinary scabies*
Child over 15 kg and adult: 200 µg/kg as a single dose. A single dose may be sufficient; a 2nd dose one week later reduces the risk of treatment failure.

– *Crusted scabies*
Child over 15 kg and adult: 2 doses of 200 µg/kg one week apart, in combination with a topical keratolytic and topical scabicide; additional doses may be necessary.

Contra-indications, adverse effects, precautions

– May cause:
  • increased itching;
  • moderate reactions in patients with onchocerciasis: ocular irritation, headache, arthralgia, myalgia, lymphadenopathy, fever, oedema;
  • severe reactions in patients co-infected with *Loa loa*: marked functional impairment if *Loa loa* microfilaraemia > 8,000 mf/ml; encephalopathy if *Loa loa* microfilaraemia > 30,000 mf/ml.
– Administer with caution in regions where loiasis is endemic:
  • *For symptomatic onchocerciasis:*
  Evaluate the severity of Loa loa microfilaraemia and manage accordingly: either treat as an out-patient under supervision, or hospitalise, or choose an alternative treatment (doxycycline).
  If it is not possible to perform a thick film examination: ivermectin may be administered if the patient has no history of loiasis (migration of an adult worm under the conjunctiva or transient « Calabar » swellings), nor history of severe adverse reactions following a previous treatment with ivermectin. In other cases, it is wiser either to treat under supervision, or to choose an alternative treatment (doxycycline), or decide not to treat, according to the severity of the onchocerciasis and the previous history.
  • *For ordinary scabies*: review the patient's history and if in doubt, topical scabicidal treatment is preferred.
– *Pregnancy: avoid (safety is not established)*
– *Breast-feeding: no contra-indication*

Remarks

– Take tablets on an empty stomach.
– Ivermectin is also used for the treatment of strongyloidiasis (200 µg/kg as a single dose) and cutaneous larva migrans (200 µg/kg daily for 1 to 2 days).
– *Storage: below 25°C –*

LABETALOL

Prescription under medical supervision

Therapeutic action

– Non cardioselective beta-blocker

Indications

– Hypertension in pregnancy

Presentation

– 100 mg and 200 mg tablets

Dosage

– 200 mg/day in 2 divided doses. Increase if necessary in 100 to 200 mg increments until an effective dose is reached, usually 400 to 800 mg/day (max. 2400 mg/day). If higher doses are required, give in 3 divided doses.

Duration

– According to clinical response. Do not stop treatment abruptly, decrease doses gradually.

Contra-indications, adverse effects, precautions

– Do not administer to patients with asthma, chronic obstructive bronchopneumonia, heart failure, severe hypotension, bradycardia < 50/minute, atrio-ventricular heart blocks, Raynaud's syndrome, hepatic impairment.
– May cause: bradycardia, hypotension, heart failure, bronchospasm, hypoglycaemia, gastrointestinal disturbances, dizziness, headache, weakness, urinary retention.
– Administer with caution to patients with diabetes (risk of hypoglycaemia).
– Reduce dosage in patients with renal impairment.
– In the event of anaphylactic shock, risk of resistance to epinephrine.
– Avoid or monitor combination with: mefloquine, digoxin, amiodarone, diltiazem, verapamil (risk of bradycardia); tricyclic antidepressants, neuroleptics, other anti-hypertensive drugs (risk of hypotension).
– Do not administer simultaneously with antacids (aluminium or magnesium hydroxide, etc.). Administer 2 hours apart.
– Monitor the newborn: risk of hypoglycaemia, bradycardia, respiratory distress occurring most often during the first 24 hours and until 72 hours after the birth.
– *Breast-feeding: no contra-indication*

Remarks

– *Storage: below 25°C –* –

LACTULOSE

Therapeutic action

– Osmotic laxative

Indications

– Prevention of constipation in patients taking opioid analgesics (e.g. codeine, morphine)

Presentation

– 10 g/15 ml oral solution

Dosage and duration

– Child under 1 year: 5 ml/day (1 tsp/day)
– Child from 1 to 6 years: 5 to 10 ml/day (1 to 2 tsp/day)
– Child from 7 to 14 years: 10 to 15 ml/day (2 tsp/day or 1 ssp/day)
– Child over 14 years and adult: 15 to 45 ml/day (1 to 3 ssp/day)

Start lactulose when analgesic treatment continues more than 48 hours.
Lactulose must be taken daily, until the end of the opioid treatment. Regular follow up (frequency/consistency of stools) is essential in order to adjust dosage correctly.

Contra-indications, adverse effects, precautions

– Do not administer to patients with Crohn’s disease, ulcerative colitis, intestinal obstruction, undiagnosed abdominal pain.
– May cause: abdominal discomfort, flatulence and diarrhoea.
– In the event of diarrhoea, exclude a faecal impaction and intestinal obstruction; reduce the dose.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– It may take up to 48 hours, or even longer, before the treatment is effective. Lactulose is not indicated in acute constipation where a rapid result is needed.
– If necessary, lactulose may be given in combination with a stimulant laxative (e.g. bisacodyl, senna).
– The oral solution may be taken undiluted, or diluted in water.
– The treatment should be accompanied by dietary measures (fluids and fibre).
– *Storage: below 25°C. Do not store in a refrigerator (cristallisation).*

LAMIVUDINE = 3TC

Prescription under medical supervision

Therapeutic action

– Antiretroviral, HIV-1 and HIV-2 nucleoside reverse transcriptase inhibitor

Indications

– HIV-1 or HIV-2 infection, in combination with other antiretroviral drugs

Presentation

– 150 mg and 300 mg tablets
– 50 mg/5 ml oral solution

Dosage

– Child under 1 month: 4 mg/kg/day in 2 divided doses
– Child from 1 month to 12 years: 8 mg/kg/day in 2 divided doses
– Adult: 300 mg once daily or in 2 divided doses

Weight	10 mg/ml oral solution	150 mg tablet	300 mg tablet
5 to 9 kg	2.5 ml x 2	–	–
10 to 14 kg	5 ml x 2	–	–
15 to 19 kg	7 ml x 2	½ tab x 2	–
20 to 24 kg	9 ml x 2	½ tab x 2	–
25 to 29 kg	11 ml x 2	2 tab	1 tab
≥ 30 kg	–	2 tab	1 tab

Duration

– The duration of treatment depends on the efficacy and tolerance of lamivudine.

Contra-indications, adverse effects, precautions

– Administer with caution to patients with history of hepatic disorders.
– May cause: gastrointestinal disturbances (diarrhoea, nausea, vomiting, etc.) and possibly: haematological disorders, especially when combined with zidovudine (neutropenia, anaemia, thrombocytopenia), myopathy, hepatic or pancreatic disorders.
– Reduce dosage in patients with renal impairment.
– *Pregnancy: no contra-indication*

Remarks

– For prophylactic treatment to reduce mother-to-child HIV transmission, check national recommendations.
– Many fixed-dose combinations containing lamivudine are available.
– *Storage: below 25°C*
  Once opened, oral solution keeps for 30 days maximum.

LEVODOPA/CARBIDOPA



Prescription under medical supervision

Therapeutic action

– Antiparkinson drug

Indications

– Parkinson's disease and extrapyramidal disorders except those induced by neuroleptics

Presentation

– 100 mg levodopa + 10 mg carbidopa tablet
– 250 mg levodopa + 25 mg carbidopa tablet

Dosage

– Adult:
  • Initial dose of levodopa: 50 to 125 mg once or twice daily immediately after meals.
  Increase in increments of 50 to 125 mg every day or on alternate days, to individual optimal dose.
  • Maintenance dose: 750 to 1500 mg/day in 3 to 4 divided doses, immediately after meals.
– Reduce dosage in elderly patients.

Duration

– According to clinical response

Contra-indications, adverse effects, precautions

– Do not administer if severe psychosis, mental confusion, closed-angle glaucoma, recent myocardial infarction, malignant melanoma.
– May cause:
  • early in treatment, when dose is not adjusted : anorexia, vomiting, orthostatic hypotension, cardiac arrhythmia, agitation, insomnia or drowsiness, depression;
  • frequent delayed adverse effects, signs of excessive dosage, mainly:
    – dyskinesia, tremor;
    – psychiatric disorders more frequent in elderly patients: confusion, hallucinations, delirium, depression with or without suicidal tendencies;
  • later in treatment : fluctuation of the effect during the day (daily dosage may be divided into smaller doses and taken more frequently); or reduction of the effect (progression of the disease).
– Administer with caution in psychiatric disorders, cardiac disease, gastro-duodenal ulcer.
– Do not administer simultaneously with MAOIs, antidepressants, neuroleptics, reserpine.
– *Pregnancy*: ***CONTRA-INDICATED***
– *Breast-feeding*: ***CONTRA-INDICATED***

Remarks

– Tablet must be swallowed whole. Do not chew or dissolve.
– *Storage*: *below 25°C* –

LEVONORGESTREL

Prescription under medical supervision

Therapeutic action

– Hormonal contraceptive, progestogen

Indications

– Oral contraception

Presentation

– 30 micrograms (0.03 mg) tablet, 28-day pack or 35-day pack

Dosage

– 1 tablet daily at the same time, continuously, including during menstruation
  Start the first day of menstruation or immediately after abortion or as of the 21st day after childbirth if the woman does not breastfeed.
  It is also possible to start at any moment of the cycle (if the woman is not pregnant). In this case, contraception will be effective as of the 3rd tablet. It is essential to use condoms during the first 2 days.

Duration

– If there are no adverse effects, as long as contraception is desired.

Contra-indications, adverse effects, precautions

– Do not administer to women with breast cancer, severe or recent liver disease, unexplained vaginal bleeding, current thromboembolic disorders.
– May cause: amenorrhoea, menstrual disturbances, nausea, weight gain, breast tenderness, mood changes, acne, headache.
– Hepatic enzyme inducers (rifampicin, rifabutin, nevirapine, ritonavir, phenobarbital, phenytoin, carbamazepine, griseofulvin, etc.) reduce the contraceptive efficacy. Use copper intrauterine device or condoms or injectable medroxyprogesterone.
– *Pregnancy*: ***CONTRA-INDICATED***
– *Breast-feeding: it is recommended to wait 6 weeks after childbirth before starting levonorgestrel in breastfeeding women. However, if it is the only contraceptive method available or acceptable, it can be started 3 weeks after childbirth.*

Remarks

– Levonorgestrel is a possible alternative when estroprogestogens are contra-indicated or poorly tolerated. However, it has a lesser contraceptive effect than estroprogestogens and requires taking tablets at a precise time (no more than 3 hours late).
– If a woman misses a tablet, she should take it as soon as possible and continue treatment as normal. If she misses by over 3 hours, contraceptive protection will be lessened. It is therefore recommended to use an additional contraceptive method: condoms for 7 days and, if she has had sexual intercourse within 5 days before forgetting the tablet, emergency contraception.
– *Storage: below 25°C*

LEVONORGESTREL for emergency contraception

Therapeutic action

– Hormonal contraceptive, progestogen

Indications

– Prevention of pregnancy in the event of a lapse or absence of contraception

Presentation

– 1.5 mg tablet

Dosage and duration

– One 1.5 mg tablet as a single dose, whatever the day of the cycle, as soon as possible after unprotected intercourse and preferably within the first 72 hours as effectiveness decreases with time. It is however recommended to administer the treatment up to 120 hours (5 days) after unprotected intercourse.

Contra-indications, adverse effects, precautions

– No contra-indication.
– May cause: menstrual irregularities, vaginal bleeding, nausea, headache, dizziness.
– Re-administer treatment if vomiting occurs within 3 hours of taking treatment.
– Double the dose (3 mg as a single dose) in women taking prophylactic antiretroviral treatment or enzyme-inducing drugs (rifampicin, rifabutin, griseofulvin, phenytoin, phenobarbital, carbamazepine, certain antiretrovirals): contraceptive effectiveness may be reduced.
– *Pregnancy: in the event of treatment failure (i.e. pregnancy develops) or if used during an undiagnosed pregnancy, there is no known harm for the foetus.*
– *Breast-feeding: no contra-indication*

Remarks

– Emergency contraception is intended to prevent pregnancy; it cannot terminate an ongoing pregnancy.
– There is a risk of treatment failure. Carry out a pregnancy test if there is no menstruation:
  • within 5 to 7 days after the expected date, if the date is known;
  • or within 21 days following treatment.
– *Storage: below 25°C –*

LOPERAMIDE

Prescription under medical supervision

Therapeutic action

– Opioid antidiarrhoeal

Indications

– Symptomatic treatment of persistent diarrhoea in HIV patients, in combination with rehydration

Presentation

– 2 mg capsule or tablet

Also comes in 1 mg/5 ml oral solution.

Dosage

– Child from 2 to 5 years: 3 mg/day in 3 divided doses
– Child from 6 to 8 years: 4 mg/day in 2 divided doses
– Child over 8 years: 6 mg/day in 3 divided doses

Age Weight	0-2 years < 13 kg	2-5 years 13 - 20 kg	6-8 years 20 - 30 kg	> 8 years > 30 kg
Oral solution	Do not administer	1 tsp x 3	2 tsp x 2	2 tsp x 3
Capsule		–	1 cap. x 2	1 cap x 3

– Adult: 4 mg (2 capsules), then 2 mg (1 capsule) after each loose stool, without exceeding 16 mg/day (8 capsules/day)

Duration

– According to clinical response

Contra-indications, adverse effects, precautions

– Do not exceed indicated doses.
– Do not administer to children under 2 years.
– Do not administer to patients with bloody diarrhoea, acute inflammatory bowel disease, diarrhoea due to antibiotics.
– May cause: constipation, allergic skin reactions, drowsiness, dizziness.
– In the event of overdosage, treat with naloxone.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Rehydration is essential and must be adapted to the severity of diarrhoea.
– Loperamide is not included in the WHO list of essential medicines.
– *Storage: below 25°C –*

LOPINAVIR/RITONAVIR = LPV/r

Prescription under medical supervision

Therapeutic action

– Antiretrovirals, HIV-1 and HIV-2 protease inhibitors

Indications

– HIV-1 or HIV-2 infection, in combination with other antiretroviral drugs

Presentation

– 40 mg lopinavir/10 mg ritonavir tablet and capsule of oral pellets
– 100 mg lopinavir/25 mg ritonavir film coated tablet
– 200 mg lopinavir/50 mg ritonavir film coated tablet
– 80 mg lopinavir/20 mg ritonavir per ml oral solution, containing 42% alcohol (v/v), with a graduated syringe for oral administration

Dosage

– Child from 14 days to 6 months: 32/8 mg/kg/day in 2 divided doses
– Child over 6 months:
  • 7 to 15 kg: 24/6 mg/kg/day in 2 divided doses
  • 15 to 40 kg: 20/5 mg/kg/day in 2 divided doses
– Adult: 800/200 mg/day in 2 divided doses

Weight	80/20 mg/ml oral solution	100/25 mg tablet	200/50 mg tablet
< 4 kg	1 ml x 2	–	–
4 to < 10 kg	1.5 ml x 2	–	–
10 to < 14 kg	2 ml x 2	–	–
14 to < 20 kg	2.5 ml x 2	–	–
20 to < 26 kg	3 ml x 2	2 tab x 2	–
26 to < 35 kg	–	3 tab x 2	–
≥ 35 kg	–	4 tab x 2	2 tab x 2

Duration

– Depending on the efficacy and tolerance of LPV/r.

Contra-indications, adverse effects, precautions

– Do not administer to patients with severe hepatic impairment.
– Do not administer oral solution to patients with renal or hepatic impairment.
– May cause:
  • gastrointestinal disturbances (mainly diarrhoea), skin rash, pruritus;
  • hepatic disorders (raised transaminases), pancreatic disorders, metabolic disorders (lipodystrophy, hyperlipidaemia, diabetes mellitus with glucose intolerance and/or insulin resistance).
– LPV/r reduces the efficacy of oral contraceptives: use a non-hormonal contraception or injectable medroxyprogesterone or an oral contraceptive containing 50 µg ethinylestradiol per tablet.
– Avoid combination with rifampicin. Use rifabutin if possible.
– Administer with caution to patients with haemophilia (risk of haemorrhage) or renal or hepatic impairment.
– *Pregnancy: oral solution is **CONTRA-INDICATED**; no contra-indication for tablets and capsules.*

Remarks

– Tablets may be taken with meals or on an empty stomach. The oral solution must be taken with meals.
– The tablets must not be chewed or crushed.
– Capsules must be opened then oral pellets must be poured into a small amount of breast milk or soft foods and administered to the child immediately. Pellets must not be stirred, crushed, dissolved/dispersed in food, or chewed.
– *Storage: tablets: below 25°C; oral solution: between 2°C and 8°C.*
  If refrigeration is not available, oral solution kept below 25°C may be stored for 6 weeks maximum.

MEBENDAZOLE

Prescription under medical supervision

Therapeutic action

– Anthelminthic

Indications

– Ascariasis (Ascaris lumbricoides), trichuriasis (*Trichuris trichiura*), hookworm infections (*Ancylostoma duodenale*, *Necator americanus*), enterobiasis (*Enterobius vermicularis*), trichinellosis (*Trichinella spp*)

Presentation

– 100 mg and 500 mg tablets

Dosage and duration

– *Ascariasis, trichuriasis, hookworm infections*
  Child over 6 months and adult: 100 mg twice daily for 3 days
  Child over 6 months but under 10 kg: 50 mg twice daily for 3 days
– *Enterobiasis*
  Child over 6 months and adult: 100 mg as a single dose
  Child over 6 months but under 10 kg: 50 mg as a single dose
  A second dose may be given after 2 to 4 weeks.
– *Trichinellosis*
  Child over 2 years: 5 mg/kg/day in 2 divided doses for 10 to 15 days
  Adult: 400 mg/day in 2 divided doses for 10 to 15 days

Contra-indications, adverse effects, precautions

– Do not administer to children under 6 months.
– May cause: gastrointestinal disturbances, headache, dizziness.
– *Pregnancy: avoid during the first trimester*
– *Breast-feeding: no contra-indication*

Remarks

– Albendazole is easier to use and is preferred in mixed infections as it has a broader spectrum of activity.
– Tablets are to be chewed or crushed: follow manufacturer's instructions.
– Take tablets between meals.
– *Storage*: –

MEFLOQUINE = MQ



Prescription under medical supervision

For the treatment of malaria, use coformulated artesunate/mefloquine tablets.

Therapeutic action

– Antimalarial

Indications

– Treatment of uncomplicated falciparum malaria, in combination with artesunate
– Completion treatment following parenteral therapy for severe falciparum malaria, in combination with artesunate
– Prophylaxis of falciparum malaria for non-immune individuals

Presentation

– 250 mg scored tablet

Dosage and duration

– *Treatment of falciparum malaria (in combination with artesunate administered on D1, D2, D3)*
Child 3 months and over (≥ 5 kg) and adult: 25 mg base/kg as a single dose

– *Prophylaxis of falciparum malaria*
Child 3 months and over (≥ 5 kg): 5 mg base/kg once a week
Adult: 250 mg base once a week
Travellers should start prophylaxis 2 to 3 weeks before departure and continue throughout the stay and for 4 weeks after return.

Contra-indications, adverse effects, precautions

– Do not administer to patients with neuropsychiatric disorders (or history of), seizures, hypersensitivity to mefloquine or quinine; mefloquine treatment in the previous 4 weeks.
– For completion treatment following parenteral therapy for severe malaria: do not administer if the patient developed neurological signs during the acute phase.
– For prophylaxis: do not administer to patients with severe hepatic impairment.
– May cause:
  • gastrointestinal disturbances, dizziness, headache, sleeping disorders (effects usually transitory when used for prophylaxis);
  • more rarely: neuropsychiatric reactions, heart rhythm disorders, hypo or hypertension, skin allergies.
– If the patient vomits less than 30 minutes after administration, repeat the full dose. If the patient vomits within 30 to 60 minutes, re-administer a half the dose.
– Do not combine with anti-epileptics (risk of seizures), coartemether, chloroquine, halofantrine (risk of seizures, cardiac toxicity).
– Do not administer simultaneously with quinine (risk of seizures, cardiac toxicity). If mefloquine is used after quinine IV, administer mefloquine 12 hours after the last dose of quinine.
– Administer with caution to patients taking antiarrhythmics, beta-blockers, calcium-channel blockers or digitalis (risk of heart rhythm disorders).
– *<u>Pregnancy</u>: no contra-indication during the 2nd and 3rd trimester. Safety in the first trimester has not been definitely established. However, given the risks associated with malaria, the combination artesunate-mefloquine may be used during the first trimester if it is the only effective treatment available.*
– *<u>Breast-feeding</u>: no contra-indication*

Remarks

– *<u>Storage</u>: below 25°C –*

METAMIZOLE = DIPYRONE = NORAMIDOPYRINE



Prescription under medical supervision

The use of this drug is not recommended:
– it is potentially harmful;
– it has been taken off the market in many countries;
– it must never be prescribed as a first choice treatment.

Therapeutic action

- Analgesic
- Antipyretic

Indications

- Severe pain
- High fever

Presentation

- 500 mg tablet

Dosage

- Child over 5 years: 250 mg to 1 g/day in 3 divided doses
- Adult: 500 mg to 3 g/day in 3 divided doses

Duration

- According to clinical response, 1 to 3 days

Contra-indications, adverse effects, precautions

- Do not administer in case of gastric ulcer.
- Severe and fatal cases of agranulocytosis have been reported. Use only when usual antipyretics and analgesics (acetylsalicylic acid and paracetamol) have been ineffective.
- *Pregnancy: avoid*
- *Breast-feeding: avoid*

Remarks

- Metamizole is not included in the WHO list of essential medicines.
- *Storage: below 25°C*

METHYLDOPA



Prescription under medical supervision

Therapeutic action

– Centrally acting antihypertensive

Indications

– Hypertension in pregnancy

Presentation

– 250 mg tablet

Dosage

– Initially 500 to 750 mg/day in 2 to 3 divided doses for 2 days, then increase gradually if necessary by 250 mg every 2 to 3 days, until the optimal dose is reached, usually 1.5 g/day. Do not exceed 3 g/day.

Duration

– According to clinical response. Do not stop treatment abruptly; reduce doses gradually.

Contra-indications, adverse effects, precautions

– Do not administer to patients with active liver disease, history of drug-related liver disease, severe depression.
– Administer with caution to patients with hepatic impairment, and reduce doses in patients with renal impairment.
– May cause:
  • orthostatic hypotension, drowsiness, headache, gastrointestinal disturbances, dry mouth;
  • rarely: haematological, hepatic, psychical disorders; allergic reactions.
– Stop treatment if haemolytic anaemia or jaundice appear during treatment.
– In the event of unexplained fever during treatment, check blood count and transaminases for possible hepatitis due to methyldopa.
– Monitor combination with lithium (risk of lithium overdose), antidepressants (enhanced hypotensive effect), CNS depressants (increased sedation).
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– *Storage: below 25°C*

METOCLOPRAMIDE

Prescription under medical supervision

Therapeutic action

– Antiemetic (dopamine antagonist)

Indications

– Symptomatic treatment of nausea and vomiting in adults

Presentation

– 10 mg tablet

Dosage

– Adult under 60 kg: 15 mg/day in 3 divided doses
– Adult over 60 kg: 30 mg/day in 3 divided doses

The interval between each dose should be at least 6 hours (even in the event of vomiting).

Duration

– A few days

Contra-indications, adverse effects, precautions

– Do not administer to children < 18 years and to patients with gastrointestinal haemorrhage, obstruction or perforation.
– Reduce the dose by half in patients with severe renal impairment.
– Administer with caution and monitor use in patients > 60 years and patients with epilepsy or Parkinson's disease.
– May cause: drowsiness (caution when driving/operating machinery), dizziness, confusion, extrapyramidal symptoms, seizures (especially in epileptics), allergic reactions; neuroleptic malignant syndrome (unexplained hyperthermia with neuromuscular disorders), exceptional but requiring immediate treatment discontinuation.
– Do not combine with levodopa (antagonism).
– Avoid combination with CNS depressants (opioid analgesics, antipsychotics, sedatives, antidepressants, antihistamines, etc.).
– Avoid alcohol during treatment.
– *Pregnancy: no contraindication*
– *Breast-feeding: no contraindication*

Remarks

– *Storage: below 25°C* – –

METRONIDAZOLE

Prescription under medical supervision

Therapeutic action

– Antiprotozoal, antibacterial (group of nitroimidazoles)

Indications

– Amoebiasis, giardiasis, trichomoniasis
– Bacterial vaginitis, infections due to anaerobic bacteria (e.g. *Clostridium sp*, *Bacteroides sp*, etc.)

Presentation

– 250 mg and 500 mg tablets
– 200 mg/5 ml oral suspension

Dosage and duration

– *Amoebiasis*
  Child: 45 mg/kg/day in 3 divided doses
  Adult: 500 to 800 mg 3 times daily
  The treatment lasts 5 days in intestinal amoebiasis and 5 to 10 days in hepatic amoebiasis.
– *Giardiasis*
  Child: 30 mg/kg once daily for 3 days
  Adult: 2 g once daily for 3 days
– *Trichomoniasis and bacterial vaginitis*
  Adult: 2 g as a single dose
  In the event of trichomoniasis, also treat sexual partner.
– *Infections due to anaerobic bacteria*
  Child: 30 mg/kg/day in 3 divided doses
  Adult: 500 mg 3 times daily
  According to indication, metronidazole may be used in combination with other antibacterials; treatment duration depends on indication.

Contra-indications, adverse effects, precautions

– Do not administer to patients with hypersensitivity to metronidazole or another nitroimidazole (tinidazole, secnidazole, etc.).
– May cause: gastrointestinal disturbances; rarely: allergic reactions, brownish urine, headache, dizziness. Risk of antabuse reaction when combined with alcohol.
– Administer with caution in patients taking oral anticoagulants (risk of haemorrhage), lithium, phenytoin, ergometrine (increased plasma concentrations of these drugs).
– Reduce total daily dose to ⅓ and give once daily to patients with severe hepatic impairment.
– *Pregnancy: no contra-indication; divide into smaller doses, avoid prolonged use.*
– *Breast-feeding: significantly excreted in milk (risk of gastrointestinal disturbances in breastfed infants); divide into smaller doses, avoid prolonged use.*

Remarks

– *Storage: below 25°C –*
  For the oral suspension: follow manufacturer's instructions.

MICONAZOLE

Therapeutic action

– Antifungal

Indications

– Oropharyngeal candidiasis in immunodeficient patients

Presentation

– 10 mg muco-adhesive buccal tablet

Dosage and duration

– Child over 7 years and adult: one tablet once daily for 7 days; a 14-day treatment may be required.

Moisten the tablet with the tongue. Place the tablet on the upper gingiva, above a lateral incisor. Apply a slight pressure to the outside of the upper lip for a few seconds. The tablet sticks to the gingiva and slowly releases miconazole for 8 to 12 hours.

Contra-indications, adverse effects, precautions

– May cause: nausea, altered taste.
– Monitor patients taking warfarin (anticoagulant effect increased).
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Do not suck, chew or swallow tablets. The treatment being local, swallowing is not harmful but is ineffective.
– If the tablet unsticks within 6 hours, replace with another (only once over a 24-hour period). If the tablet is accidentally swallowed, drink a glass of water.
– Miconazole is not contra-indicated in young children but it is difficult to use correctly muco-adhesive buccal tablets in children under 7 years.
– *Storage: below 25°C –*

  Tablets are packed in a blister containing 7 tablets. Leave tablets in blister until use. Once a tablet is removed from the blister, it must be used immediately.

MIFEPRISTONE = RU486

Prescription under medical supervision

Therapeutic action
– Antiprogestogen

Indications
– Termination of intra-uterine pregnancy, in combination with misoprostol
– Induction of labour in the event of intrauterine foetal death, in combination with misoprostol

Presentation
– 200 mg tablet

Dosage and duration
– *Termination of pregnancy up to 12/14 weeks after the last menstrual period*
  200 mg as a single dose, followed by a dose of misoprostol 36 to 48 hours later
– *Induction of labour in the event of intrauterine foetal death*
  600 mg once daily for 2 days, followed by a dose of misoprostol the 3rd day

Contra-indications, adverse effects, precautions
– Do not administer to patients with chronic adrenal failure or severe uncontrolled asthma.
– May cause: gastrointestinal disturbances, vaginal bleeding, uterine contractions, headache.
– *Breast-feeding: no contra-indication for a single dose; to be avoided if multiple doses (induction of labour in intrauterine foetal death)*

Remarks
– For labour induction in the event of intrauterine foetal death, mifepristone may sometimes be sufficient to initiate labour but it is often necessary to administer misoprostol.
– Do not use mifepristone in ectopic or molar pregnancy.
– *Storage: below 25°C* – –

MISOPROSTOL

Prescription under medical supervision

Therapeutic action

– Cervical ripening agent, oxytocic drug (prostaglandin analogue)

Indications

– Cervical dilation before aspiration or curettage
– First trimester incomplete abortion
– Termination of intra-uterine pregnancy, preferably in combination with mifepristone
– Induction of labour when the cervix is not favourable, preferably in combination with mifepristone in the case of intrauterine foetal death
– Treatment of post-partum haemorrhage due to uterine atony, when injectable oxytocics are not available or ineffective

Presentation

– 200 micrograms scored tablet

Dosage and duration

– *Cervical dilation before aspiration or curettage*
400 micrograms as a single dose sublingually or vaginally, 3 hours before the procedure
– *First trimester incomplete abortion*
400 micrograms as a single dose sublingually or 600 micrograms as a single dose orally
– *Termination of pregnancy up to 12-14 weeks after the last menstrual period*
800 micrograms sublingually or vaginally then, if necessary, 400 micrograms every 3 hours, until expulsion starts (max. 5 doses in total or 2400 micrograms)
– *Induction of labour*
  • intrauterine foetal death: 200 micrograms (2nd trimester) or 100 micrograms (3rd trimester) or 50 micrograms (9th month) vaginally, every 6 hours until labour starts (max. 3 doses per 24 hours, to be repeated if necessary the following day)
  • viable pregnancy: 50 micrograms vaginally every 6 hours or 25 micrograms orally every 2 hours until labour starts (max. 150 micrograms)
– *Treatment of post-partum haemorrhage*
800 micrograms as a single dose sublingually

Contra-indications, adverse effects, precautions

– For induction of labour:
  • Do not administer in the event of previous caesarean section and grand multiparity if the foetus is viable (risk of uterine rupture). If the foetus is dead or non-viable or viable but a caesarean section cannot be performed, reduce each dose by half and do not exceed 3 doses in total.
  • Do not administer simultaneously with oxytocin. At least 6 hours must have elapsed since the last administration of misoprostol before oxytocin can be given.
  • Regular monitoring of the intensity and frequency of contractions is mandatory after administration of misoprostol.
  • If the foetus is viable, continuous foetal heart monitoring is mandatory for 30 minutes after administration of each dose of misoprostol and once contractions are experienced or detected.
– May cause: dose-dependent diarrhoea, vomiting, uterine hypertony, headache, fever, chills, foetal heart rhythm disorders, foetal distress.
– *Breast-feeding: no contra-indication*

Remarks

– To prepare an oral dose of 25 micrograms, dilute one 200 micrograms tablet into 200 ml of water. Take 25 ml of the solution (1 microgram/ml). Shake the bottle before use.
– For termination of pregnancy and induction of labour after intrauterine foetal death, it is preferable to administer mifepristone first to improve the efficacy of misoprostol and reduce the number of dose required.
– Do not use misoprostol in ectopic or molar pregnancy.
– *Storage: below 25° C*

MORPHINE
immediate-release (MIR)



Prescription under medical supervision

Therapeutic action
– Centrally acting opioid analgesic

Indications
– Severe pain

Presentation
– 10 mg immediate-release tablet
– 10 mg/5 ml oral solution, for pediatric use

Dosage
There is no standard dose. The optimal dose is that which provides efficient pain relief to the patient. It is adjusted in relation to the regular assessment of pain intensity and the incidence of adverse effects.
– Day 1:
  • Start with a scheduled treatment (scheduled doses):
  Child over 6 months: 1 mg/kg/day in 6 divided doses at 4-hour intervals
  Adult: 60 mg/day in 6 divided doses at 4-hour intervals
  • Adjust the treatment if pain persists by administering "rescue" doses between the scheduled doses. The rescue doses administered are the same as the scheduled doses.
– Then, adjust scheduled treatment every 24 hours according to the total dose given the day before (i.e. total scheduled doses + total rescue doses).
  For example, Day 1, for a dose of 60 mg/day, i.e. 10 mg every 4 hours:

Hours	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7
Scheduled doses	10 mg				10 mg				10 mg				10 mg				10 mg				10 mg			
Example simple verbal scale	severe pain		moderate pain		mild pain		moderate pain		mild pain		mild pain		mild pain		moderate pain		mild pain				mild pain			
Example rescue doses			10 mg				10 mg								10 mg									

  In this example, the scheduled treatment on Day 2 is 90 mg/day, i.e. 60 mg (total scheduled doses on Day 1) + 30 mg (total rescue doses on Day 1) in 6 divided doses, i.e. 15 mg every 4 hours.
– Scheduled doses must be administered at regular time intervals and not on demand, even at night, unless the patient is abnormally drowsy (in this event, delay the administration).
– Reduce the dose by half in elderly patients and patients with renal or hepatic impairment.

Duration: once the pain is controlled, change to sustained-release morphine.

Contra-indications, adverse effects, precautions
– See sustained-release oral morphine (MSR).

Remarks
– Administer an appropriate laxative (e.g. lactulose) if analgesic treatment continues more than 48 hours.
– The morphine dose in tablets is not suitable for young children. Use oral solution instead. If this is not available, use injectable morphine by the oral route: dilute an ampoule of 10 mg/ml (1 ml) with 9 ml of water to obtain a solution containing 1 mg/ml.
– Morphine is on the list of narcotics: follow national regulations.
– *Storage: below 25°C –*

MORPHINE
sustained-release (MSR)



Prescription under medical supervision

Therapeutic action

– Centrally acting opioid analgesic

Indications

– Severe and persistent pain, especially cancer pain

Presentation

– 10 mg, 30 mg and 60 mg sustained-release capsules or tablets

Dosage

– Usually, the effective daily dose is determined during the initial treatment with immediate-release morphine (MIR). When changing from MIR to MSR, the daily dose remains the same. For example, if the effective dose of MIR is 20 mg 6 times/day (120 mg/day), the dose of MSR is 60 mg 2 times/day (120 mg/day).
– If treatment is initiated directly with MSR:
  • Child over 6 months: initially 1 mg/kg/day in 2 divided doses at 12-hour intervals
  • Adult: initially 60 mg/day in 2 divided doses at 12-hour intervals
  Adjust the dose if necessary, increasing the dose by 50% per day until pain relief is obtained.
– Patients stabilized on MSR may require rescue doses of MIR in the event of episodic (breakthrough) pain. A rescue dose corresponds to 10% of the daily MSR dose. If a patient regularly requires more than 3 rescue doses per day, increase the daily MSR dose by the sum of rescue doses.

Duration

– According to clinical response. Do not stop long-term treatment abruptly. Decrease doses progressively to avoid withdrawal symptoms.

Contra-indications, adverse effects, precautions

– Do not administer to patients with severe respiratory impairment or decompensated hepatic impairment.
– Do not initiate treatment with the sustained-release formulation in elderly patients or those with renal or hepatic impairment. Begin treatment with the immediate release formulation (MIR).
– May cause:
  • dose-related sedation and respiratory depression, nausea, vomiting, constipation, urinary retention, confusion, raised intracranial pressure, pruritus;
  • in the event of overdose: excessive sedation, respiratory depression, coma.
– Management of respiratory depression includes assisted ventilation and/or administration of naloxone. Monitor patient closely for several hours.
– Administer with caution to patients with respiratory impairment, head injury, raised intracranial pressure, uncontrolled epilepsy or urethroprostatic disorders.
– Do not combine with opioid analgesics with mixed agonist-antagonist activity such as buprenorphine, nalbuphine, pentazocine (competitive action).
– Increased risk of sedation and respiratory depression, when combined with alcohol and drugs acting on the central nervous system: benzodiazepines (diazepam, etc.), neuroleptics (chlorpromazine, haloperidol, etc.), antihistamines (chlorphenamine, promethazine), phenobarbital, etc.
– *Pregnancy and breast-feeding: no contra-indication. The child may develop withdrawal symptoms, respiratory depression and drowsiness when the mother receives morphine at the end of the 3rd trimester and during breast-feeding. In these situations, administer with caution, for a short period, at the lowest effective dose, and monitor the child.*

Remarks

– Administer an appropriate laxative (e.g. lactulose) if analgesic treatment continues more than 48 hours.
– Do not crush or chew capsules. They can be opened and emptied into food.
– Morphine is on the list of narcotics: follow national regulations.
– *Storage: below 25°C* – –

MULTIVITAMINS – VITAMIN B COMPLEX

Therapeutic action

– Vitamin supplementation

Indications

– Few indications: this drug has no effect in case of real vitamin deficiency. Nevertheless, vitamin supplementation helps to prevent some deficiencies in people at risk (e.g. pregnant women).

Presentation

– Tablet. Composition varies in quality and quantity, with manufacturers.
Examples of composition per tablet:

	Multivitamins	B complex	Daily needs (adult)
Vitamin A	2500 IU	/	2500 IU
Vitamin B1	1 mg	1 mg	0.9 to 1.3 mg
Vitamin B2	0.5 mg	1 mg	1.5 to 1.8 mg
Vitamin B3 (= PP)	7.5 mg	15 mg	15 to 20 mg
Vitamin C	15 mg	/	10 mg
Vitamin D3	300 IU	/	100 to 200 UI

Dosage

– Child under 5 years: 1 tab/day
– Child over 5 years: 2 tab/day
– Adult: 3 tab/day

Duration

– Depending on situation

Contra-indications, adverse effects, precautions

– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Specific vitamin deficiency states require appropriate doses of vitamins.
– Multivitamins are not included in the WHO list of essential medicines.
– Storage: keep in a cool place (8°C to 15°C) –

NEVIRAPINE = NVP

Prescription under medical supervision

Therapeutic action

– Antiretroviral, HIV-1 non nucleoside reverse transcriptase inhibitor

Indications

– HIV-1 infection, in combination with other antiretroviral drugs

Presentation

– 50 mg dispersible tablet
– 200 mg tablet
– 50 mg/5 ml oral suspension

Dosage

– Child from 2 months to 8 years: 4 mg/kg once daily for 14 days, then 14 mg/kg/day in 2 divided doses from the 15th day
– Child over 8 years: 4 mg/kg once daily for 14 days, then 8 mg/kg/day in 2 divided doses from the 15th day, without exceeding 400 mg/day
– Adult: 200 mg once daily for 14 days, then 400 mg/day in 2 divided doses from the 15th day

Weight	10 mg/ml oral suspension		200 mg tablet	
	Initial	Maintenance	Initial	Maintenance
5 to < 10 kg	3 ml	6 ml x 2	Use oral suspension	–
10 to < 15 kg	5 ml	10 ml x 2		½ tab x 2
15 to < 20 kg	7 ml	14 ml x 2	½ tab	1 tab AM and ½ tab PM
20 to < 25 kg	10 ml	< 8 years: 16 ml x 2	½ tab	< 8 years: 1 tab AM and ½ tab PM
		> 8 years: 10 ml x 2		> 8 years: ½ tab x 2
25 to < 30 kg	12 ml	< 8 years: 20 ml x 2	½ tab	< 8 years: 1 tab x 2
		> 8 years: 12 ml x 2		> 8 years: ½ tab x 2
30 to < 40 kg	14 ml	14 ml x 2	1 tab	1 tab AM and ½ tab PM
40 to < 50 kg	–	–	1 tab	1 tab x 2
≥ 50 kg	–	–	1 tab	1 tab x 2

Duration: the duration of treatment depends on the efficacy and tolerance of nevirapine.

Contra-indications, adverse effects, precautions

– Do not administer to patients with severe hepatic impairment, history of severe intolerance to nevirapine that led to permanent discontinuation of treatment.
– May cause:
  • cutaneous reactions sometimes severe (Lyell's and Stevens-Johnson syndromes), hepatic disorders possibly severe (fulminant hepatitis). In these cases, stop taking nevirapine immediately and permanently;
  • gastrointestinal disturbances, headache, myalgia.
– Nevirapine reduces the efficacy of oral contraceptives: use a non-hormonal contraception or injectable medroxyprogesterone or an oral contraceptive containing 50 µg ethinylestradiol per tablet.
– Avoid combination with rifampicin (decreases the efficacy of nevirapine). Use rifabutin if possible. If rifabutin is not available, use efavirenz rather than nevirapine.
– Monitor liver enzyme level (ALAT) during the first 2 months, then every 3 to 6 months. If the enzyme level reaches 5 times the normal level, stop nevirapine immediately.
– *Pregnancy: no contra-indication*

Remarks

– For prophylactic treatment to reduce mother-to-child transmission, check national recommendations.
– To improve tolerance, respect the initial 14-day phase of treatment. In the event of restarting treatment after having stopped for more than 7 days, recommence initial 14-day phase.
– Tablets are not scored. When half a tablet is required, use a cutter to cut the tablet into two equal parts.
– Also comes in fixed-dose combination tablets incorporating nevirapine-lamivudine-zidovudine.
– *Storage: below 25°C*
  Once opened, oral suspension keeps for 2 months maximum.

NICLOSAMIDE

Therapeutic action
– Anthelminthic (taenicide)

Indications
– Taeniasis: beef tapeworm (*Taenia saginata*), pork tapeworm (*Taenia solium*), dwarf tapeworm (*Hymenolepis nana*) and fish tapeworm (*Diphyllobothrium latum*)

Presentation
– 500 mg chewable tablet

Dosage and duration
– *T. saginata, T. solium and D. latum*
  Child under 2 years: 500 mg as a single dose
  Child from 2 to 6 years: 1 g as a single dose
  Child over 6 years and adult: 2 g as a single dose
– *H. nana*
  Child under 2 years: 500 mg on the first day, then 250 mg/day for 6 days
  Child from 2 to 6 years: 1 g on the first day, then 500 mg/day for 6 days
  Child over 6 years and adult: 2 g on the first day, then 1 g/day for 6 days

Contra-indications, adverse effects, precautions
– May cause: gastrointestinal disturbances.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks
– Chew or crush the tablets before swallowing and washing down with water.
– In the event of vomiting, the single dose may be divided in 2 doses taken with an interval of one hour.
– As niclosamide is a taenicide, do not expect the patient to expel the worm, portions are voided in a partially digested form.
– Niclosamide is not active against the larval form of *T. solium* (cysticercosis).
– *Storage: below 25°C –*

NICOTINAMIDE = VITAMIN PP = VITAMIN B3

Therapeutic action

– Vitamin

Indications

– Treatment of pellagra

Presentation

– 50 mg tablet

Also comes in 100 mg tablet.

Dosage and duration

– Child and adult: 300 to 500 mg/day in 2 divided doses, with a diet rich in protein, until the patient is fully cured

Contra-indications, adverse effects, precautions

– *Pregnancy and breast-feeding: avoid, except if clearly needed (safety is not established)*

Remarks

– Nicotinamide is also called niacinamide.
– Vitamin PP deficiency is common when diet is almost entirely based on sorghum, millet or maize.
– Vitamin PP deficiency often occurs in association with other vitamin B-complex deficiency (thiamine, pyridoxine), especially in alcoholic patients.
– Vitamin PP is usually one of the components of multivitamin preparations and B-complex (7.5 mg to 15 mg/tablet).
– Nicotinic acid has a similar action to nicotinamide, but is no longer used because of its adverse effects, especially its vasodilator action.
– *Storage:*

NIFEDIPINE



Prescription under medical supervision

Therapeutic action
- Uterine relaxant
- Antihypertensive drug (calcium channel blocker)

Indications
- Threatened premature labour
- Hypertension

Presentation
- 10 mg short-acting (liquid-filled) capsule
- 10 mg prolonged-release tablet

Dosage
- *Threatened premature labour* (short-acting capsule)
  10 mg by oral route, to be repeated every 15 minutes if uterine contractions persist (maximum 4 doses or 40 mg), then 20 mg by oral route every 6 hours
- *Hypertension* (prolonged-release tablets)
  20 to 100 mg/day in 2 divided doses or 20 to 90 mg once daily depending on the preparation used

Duration
- *Threatened premature labour*: 48 hours
- *Hypertension*: lifetime treatment

Contra-indications, adverse effects, precautions
- Do not administer to patients with severe cardiac disease (recent myocardial infarction, unstable angina).
- Do not administer if systolic blood pressure is below 90 mmHg.
- May cause:
  - headache, flushing, peripheral oedema (common adverse effects at the start of treatment);
  - dizziness, hypotension, tachycardia, nausea, gingival hyperplasia, rash.
- Stop nifedipine if ischaemic chest pain occurs or existing pain increases shortly after starting treatment.
- Do not combine with magnesium sulphate, salbutamol IV, and calcium channel blockers.
- Monitor combination with cimetidine (additive hypotension), phenytoin (risk of phenytoin toxicity), rifampicin (efficacy of nifedipine diminished), itraconazole (increased risk of oedema), beta-blockers (enhanced antihypertensive effects).
- *Pregnancy*: ***CONTRA-INDICATED*** *during the 1st trimester. Never administer sublingually (risk of foetal death from placental hypoperfusion).*
- *Breast-feeding*: *avoid*

Remarks
- For the management of hypertension in pregnancy, use labetalol or methyldopa.
- Short-acting formulations of nifedipine should not be used in hypertension since their use may cause excessive fall in blood pressure and cerebral or myocardial ischaemia.
- Prolonged-release tablets must be swallowed whole.
- Also comes in 20 mg, 30 mg, 60 mg and 90 mg prolonged-release tablets to be administered once daily or to be administered twice daily. Follow manufacturer's instructions.
- *Storage*: *below 25°C –*

NITROFURANTOIN

Prescription under medical supervision

Therapeutic action

– Antibacterial (group of nitrofuranes)

Indications

– Uncomplicated cystitis, without fever or lumbar pain

Presentation

– 100 mg tablet

Dosage and duration

– Adult: 300 mg/day in 3 divided doses for 5 to 7 days

Contra-indications, adverse effects, precautions

– Do not administer to patients with renal impairment, allergy to nitrofurantoin.
– May cause: nausea, vomiting, allergic reactions; haemolytic anaemia in patients with G6PD deficiency.
– Do not administer simultaneously with antacids, administer 2 hours apart.
– *Pregnancy*: ***CONTRA-INDICATED*** *during the last month of pregnancy (risk of haemolysis in newborn)*
– *Breast-feeding: avoid during the first month*

Remarks

– Take during meals.
– Also comes in 25 mg/5 ml oral solution.
– *Storage: below 25°C* – –

NYSTATIN

Therapeutic action
– Antifungal

Indications
– Mild oropharyngeal candidiasis

Presentation
– 100 000 IU/ml oral suspension, bottle with calibrated dropper

Also comes in 100 000 IU lozenges to be sucked.

Dosage and duration
– Child and adult: 400 000 IU/day in 4 divided doses (1 ml of the oral suspension or one lozenge to be sucked, 4 times daily) for 7 days
  The oral suspension should be retained in the mouth for a few minutes before swallowing, or, in young children, applied to the tongue and the inside of the cheeks.

Contra-indications, adverse effects, precautions
– Take between meals (e.g. at least 30 minutes before eating).
– Shake oral suspension well before using.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks
– For the treatment of moderate to severe oropharyngeal candidiasis, use fluconazole.
– Nystatin also comes in 100 000 IU and 500 000 IU film coated tablets for the treatment of oesophageal candidiasis. These tablets are meant to be swallowed directly, without being sucked. They should not be used for the treatment of oropharyngeal candidiasis as this requires topical treatment.
– For oesophageal candidiasis, oral fluconazole is recommended for first-line treatment. Film coated nystatin tablets (400 000 IU/day in children and 2 000 000 IU/day in adults, in 4 divided doses for 2 to 3 weeks) should only be used when fluconazole is not available or contra-indicated.
– *Storage: below 25°C*
  Once the vial has been opened, the oral suspension keeps 7 days maximum.

OMEPRAZOLE

Prescription under medical supervision

Therapeutic action

– Antiulcer drug (proton pump inhibitor)

Indications

– Gastro-oesophageal reflux
– Gastric and duodenal ulcers in adult

Presentation

– 10 mg dispersible gastro-resistant tablet
– 20 mg gastro-resistant capsule

Dosage

– *Gastro-oesophageal reflux*
  Child under 5 kg: 0.7 to 1.4 mg/kg/day (max. 2.8 mg/kg)
  Child 5 to 10 kg: 5 mg/day
  Child 10 to 20 kg: 10 mg/day
  Child over 20 kg and adult: 20 mg/day
  Omeprazole is taken once daily in the morning.

Age	Weight	1 mg/ml sol.*	10 mg tablet**	20 mg capsule
< 2 months	< 5 kg	3 ml	–	–
2 months to < 1 year	5 to < 10 kg	5 ml	–	–
1 to < 6 years	10 to < 20 kg	–	1 tab	–
≥ 6 years and adult	≥ 20 kg	-	–	1 cap

* In a syringe, dissolve a ½ dispersible tablet (5 mg) in 5 ml of water to obtain a solution of 1 mg/ml.
** Dissolve 1 dispersible tablet in half a glass.

– *Gastric and duodenal ulcers*
  Adult: 20 mg once daily in the morning

Duration

– *Gastro-oesophageal reflux*: 3 days (short-term relief of symptoms) or 4 to 8 weeks (long-term treatment); *gastric and duodenal ulcers*: 7 to 10 days

Contra-indications, adverse effects, precautions

– Do not exceed 0.7 mg/kg/day (max. 20 mg/day) in patients with severe hepatic impairment.
– May cause: headache, diarrhoea, constipation, nausea, vomiting, abdominal pain, dizziness, skin rash, fatigue.
– Monitor combination with:
  • atazanavir, itraconazole (decreased efficacy of these drugs);
  • diazepam, phenytoin, digoxin, raltegravir (increased toxicity of these drugs).
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Do not open capsules.
– Omeprazole is also used in combination with 2 antibacterial drugs for cure of Helicobacter pylori infection.
– *Storage: below 25°C –*
  Once dissolved, dispersible tablets should be administered within 30 minutes.

ORAL REHYDRATION SALTS = ORS

Therapeutic action

– Prevention and treatment of dehydration from acute diarrhoea, cholera, etc.

Presentation

– Sachet of powder to be diluted in 1 litre of clean water.
– WHO formulation:

	grams/litre		mmol/litre
sodium chloride	2.6	sodium	75
glucose	13.5	chloride	65
potassium chloride	1.5	glucose	75
trisodium citrate	2.9	potassium	20
		citrate	10
Total weight	20.5	Total osmolarity	245

Dosage

– *Prevention of dehydration (WHO - Treatment plan A)*
Child under 24 months: 50 to 100 ml after each loose stool (approximately 500 ml/day)
Child from 2 to 10 years: 100 to 200 ml after each loose stool (approximately 1000 ml/day)
Child over 10 years and adult: 200 to 400 ml after each loose stool (approximately 2000 ml/day)

– *Treatment of moderate dehydration (WHO - Treatment plan B)*
Child and adult:
Over the first four hours:

Age	under 4 months	4 to 11 months	12 to 23 months	2 to 4 years	5 to 14 years	15 years and over
Weight	under 5 kg	5 to 7.9 kg	8 to 10.9 kg	11 to 15.9 kg	16 to 29.9 kg	30 kg and over
ORS in ml	200 to 400	400 to 600	600 to 800	800 to 1200	1200 to 2200	2200 to 4000

After four hours:
If there are no signs of dehydration: follow *Treatment plan A*.
If there are signs of moderate dehydration: repeat *Treatment plan B*.
If there are signs of severe dehydration: start IV therapy (*Treatment plan C*).

– *Treatment of severe dehydration (WHO - Treatment plan C)*
In combination with IV therapy and only to a conscious patient:
Child and adult: 5 ml/kg/hour
After 3 hours (6 hours in infants), reassess and choose the appropriate *plan A*, *B* or *C*.

Duration

– As long as diarrhoea and signs of dehydration persist.

Contra-indications, adverse effects, precautions

– If the eyelids become puffy during the treatment: stop ORS, give plain water then, resume ORS according to Treatment plan A when the puffiness is gone.
– If case of vomiting, stop ORS for 10 min and then resume at a slower rate (very small, frequent, amounts); do not stop rehydration.
– Pregnancy: *no contra-indication*
– Breast-feeding: *no contra-indication*

Remarks

– A special ORS-formula, ReSoMal, is used under medical supervision, for severely malnourished children only. However, in malnourished children with cholera, standard ORS-formula is used instead of ReSoMal.
– Storage:
Do not use the powder if it has turned into a yellow-brownish sticky substance.
Once prepared, the solution must be used within 24 hours.

PARACETAMOL = ACETAMINOPHEN

Therapeutic action

– Analgesic, antipyretic

Indications

– Mild pain
– Fever

Presentation

– 100 mg and 500 mg tablets
– 120 mg/5 ml oral suspension

Dosage

– Child: 60 mg/kg/day in 3 or 4 divided doses
– Adult: 3 to 4 g/day in 3 or 4 divided doses

Age	Weight	120 mg/5 ml susp.	100 mg tablet	500 mg tablet
< 1 month	< 4 kg	1.5 ml x 3	–	–
1 to < 3 months	4 to < 6 kg	2.5 ml x 3	½ tab x 3	–
3 months to < 1 year	6 to < 10 kg	4 ml x 3	1 tab x 3	–
1 to < 3 years	10 to < 15 kg	6 ml x 3	1½ tab x 3	–
3 to < 5 years	15 to < 20 kg	8 ml x 3	2 tab x 3	–
5 to < 9 years	20 to < 30 kg	12 ml x 3	3 tab x 3	–
9 to < 14 years	30 to < 50 kg	–	–	1 tab x 3
≥ 14 years and adult	≥ 50 kg	–	–	2 tab x 3

Duration

– According to clinical response

Contra-indications, adverse effects, precautions

– Administer with caution to patients with hepatic impairment.
– Do not exceed indicated doses, especially in children and elderly patients. Paracetamol intoxications are severe (hepatic cytolysis).
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– For mild pain, paracetamol is used alone or in combination with an NSAID.
– For moderate pain, paracetamol is used in combination with an NSAID and codeine or tramadol.
– For severe pain, paracetamol is used in combination with an NSAID and morphine.
– Paracetamol is particularly recommended for patients allergic to aspirin, patients with a history of gastric problems and for pregnant and breast-feeding women and children.
– Paracetamol has no anti-inflammatory properties.
– *Storage: below 25°C –*

PARAXETINE



Prescription under medical supervision

Therapeutic action

– Antidepressant, selective serotonin re-uptake inhibitor (SSRI)

Indications

– Major depression
– Severe post-traumatic stress disorders

Presentation

– 20 mg scored tablet

Dosage

– Adult: 20 mg once daily in the evening

Duration

– 6 months minimum. The treatment should be discontinued gradually (10 mg/day for one week then, 10 mg on alternate days for one week). If signs of relapse occur, increase the dose.

Contra-indications, adverse effects, precautions

– Administer with caution and monitor use in patients with epilepsy, diabetes, history of gastrointestinal bleeding or bipolar disorders.
– May cause:
  • allergic reactions (rare): stop treatment;
  • drowsiness (caution when driving/operating machinery), gastrointestinal disturbances (take during a meal), sexual dysfunction, headache, dizziness, blurred vision;
  • psychic disorders: exacerbation of anxiety, possibility of a suicide attempt at the beginning of therapy, manic episode during the course treatment;
  • withdrawal symptoms (dizziness, paresthesia, nightmares, etc.) very frequent if the treatment is discontinued abruptly.
– Do not combine with another antidepressant.
– Monitor combination with: phenytoin (toxicity increased), drugs which lower the seizure threshold (antispychotics, mefloquine, tramadol, etc.), lithium and other serotonergics.
– Avoid aspirin and NSAIDs (risk of bleeding) and alcohol during treatment.
– *Pregnancy: re-evaluate whether the treatment is still necessary; if it is continued, observe the newborn infant if the mother was under treatment in the 3rd trimester (risk of irritability, tremors, hypotony, sleeping disorders, etc.).*
– Breast-feeding: no contraindication

Remarks

– The antidepressant effect is not immediate. It is necessary to wait 3 weeks before assessing therapeutic efficacy. This must be explained to the patient.
– In case of insufficient response after 4 weeks, dosage may be increased to 40 mg/day (do not exceed 20 mg/day in the event of hepatic or renal impairment).
– In elderly patients, SSRI are preferred to tricyclics (less contraindications, less adverse effects).
– *Storage: below 25°C*

PHENOBARBITAL



Prescription under medical supervision

Therapeutic action

– Anticonvulsant, sedative and hypnotic

Indications

– Epilepsy: tonic-clonic (grand mal) and partial (focal) seizures

Presentation

– 50 mg and 60 mg tablets
– 5.4% oral solution (1 drop = 1 mg)

Dosage

Follow national protocol.
For information:
– Child: initial dose of 3 to 4 mg/kg once daily or in 2 divided doses, increase to 8 mg/kg/day if necessary
– Adult: initial dose of 2 mg/kg once daily at bedtime (up to 100 mg maximum), then, increase gradually if necessary, to the maximum dose of 6 mg/kg/day in 2 to 3 divided doses.

Duration

– According to clinical response

Contra-indications, adverse effects, precautions

– Do not administer in respiratory depression.
– May cause: drowsiness, depression of the central nervous system.
– Do not stop treatment abruptly.
– Risk of increased sedation when combined with alcohol and drugs acting on the central nervous system such as diazepam, chlorphenamine, chlorpromazine, etc.
– Decreases oral contraceptive efficacy.
– *Pregnancy: avoid*
– *Breast-feeding: avoid*

Remarks

– Phenobarbital is subject to international controls: follow national regulations.
– Plasma-concentrations are stable after 2 to 3 weeks. Caution: risk of accumulation.
– If necessary, phenytoin may be combined with phenobarbital.
– Also comes in 15 mg to 100 mg tablets.
Storage: below 25°C –

PHENOXYMETHYLPENICILLIN = PENICILLIN V

Prescription under medical supervision

Therapeutic action
– Penicillin antibacterial

Indications
– Streptococcal tonsillitis, scarlet fever
– Completion treatment following parenteral therapy with penicillin

Presentation
– 250 mg tablet (400 000 IU)
– Powder for oral suspension, 125 mg/5 ml (200 000 IU/5 ml), to be reconstituted with filtered water

Dosage
– Child under one year: 250 mg/day in 2 divided doses
– Child 1 to 6 years: 500 mg/day in 2 divided doses
– Child 6 to 12 years: 1 g/day in 2 divided doses
– Child over 12 years and adult: 2 g/day in 2 divided doses

Age	Weight	125 mg/5 ml oral susp.	250 mg tablet
< 1 year	< 10 kg	1 tsp x 2	–
1 to < 6 years	10 to < 21 kg	2 tsp x 2	–
6 to < 12 years	21 to < 39 kg	4 tsp x 2	2 tab x 2
≥ 12 years and adult	≥ 39 kg	–	4 tab x 2

Duration
– *Streptococcal tonsillitis, scarlet fever*: 10 days

Contra-indications, adverse effects, precautions
– Do not administer to patients with allergy to penicillin.
– Administer with caution to patients with allergy to cephalosporin (cross-sensitivity may occur) or severe renal impairment (reduce dose).
– May cause: diarrhea, nausea; allergic reactions sometimes severe.
– Do not combine with methotrexate.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks
– Take between meals.
– Also comes in 250 mg/5 ml (400 000 IU/5 ml) oral solution.
– *Storage: below 25°C* – –
For the oral suspension (powder or reconstituted suspension): follow manufacturer's instructions.

PHENYTOIN



Prescription under medical supervision

Therapeutic action
– Anticonvulsant

Indications
– Epilepsy, except absence seizure (petit mal)

Presentation
– 100 mg tablet

Aslo comes in 25 mg and 50 mg tablets.

Dosage
– Child: 3 to 8 mg/kg/day in 2 to 3 divided doses
– Adult: 2 to 6 mg/kg/day in 2 to 3 divided doses; do not exceed 500 to 600 mg/day

Duration
– According to clinical response

Contra-indications, adverse effects, precautions
– Do not administer in case of hypersensitivity to phenytoin.
– May cause:
  • gastro-intestinal disturbances: gingival hypertrophy, nausea, vomiting;
  • blood disorders: monitor blood counts if possible and administer folic acid in case of prolonged use;
  • neurological disorders: dizziness, visual disturbances, mental confusion;
  • allergic reactions: cutaneous eruption, fever, adenopathy.
– Do not stop treatment abruptly, decrease daily doses gradually.
– It is not recommended to combine phenytoin with oral contraceptives, sulphonamides, or chloramphenicol. Combination with other drugs must be closely monitored (diazepam, phenobarbital, digoxin, corticosteroids, etc.).
– *Pregnancy: avoid*
– *Breast-feeding: avoid*

Remarks
– *Storage: below 25°C –*
  Never use phenytoin after expiry date (risk of underdosage).

POTASSIUM CHLORIDE
immediate-release



Prescription under medical supervision

Therapeutic action

– Potassium supplement, when immediate effect is required

Indications

– Treatment of moderate hypokalaemia in patients with cholera

Presentation

– 7.5% potassium chloride syrup (1 mmol of K^+/ml)

Dosage

– Child under 13 years: 2 mmol (2 ml)/kg/day in 2 or 3 divided doses
– Child 13 years and over and adult: 90 mmol (ml)/day in 3 divided doses

Age	Weight	7.5% syrup
< 2 months	< 5 kg	4 ml x 2
2 months to < 1 year	5 to < 10 kg	6 ml x 2
1 to < 3 years	10 to < 15 kg	12 ml x 2
3 to < 5 years	15 to < 20 kg	20 ml x 2
5 to < 7 years	20 to < 25 kg	25 ml x 2
7 to < 9 years	25 to < 30 kg	20 ml x 3
9 to < 13 years	30 to < 45 kg	25 ml x 3
≥ 13 years and adult	≥ 45 kg	30 ml x 3

Duration

– According to clinical response. Treatment of 1 to 2 days is typically sufficient when the patient is fully able to drink oral rehydration solution and can eat.

Contra-indications, adverse effects, precautions

– Reduce dosage in elderly patients and patients with renal impairment (risk of hyperkalaemia).
– Do not combine with spironolactone and angiotensin-converting-enzyme inhibitors (e.g. enalapril).
– May cause: gastrointestinal ulcerations, diarrhoea, nausea and vomiting, rarely hyperkalaemia.
– Administer with caution in patients with gastrointestinal ulcer (risk of gastrointestinal ulcerations).
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Take with or at the end meals in order to reduce the risk of gastrointestinal ulcerations.
– Hypokalaemia is defined as a serum potassium concentration below 3.5 mmol/l.
– *Storage: below 25°C*

POTASSIUM CHLORIDE
sustained-release

Prescription under medical supervision

Therapeutic action
– Potassium supplement

Indications
– Hypokalaemia induced by :
  • thiazide diuretics (e.g. hydrochlorothiazide)
  • loop diuretics (e.g. furosemide)

Presentation
– 600 mg potassium chloride sustained-release tablet (8 mmol of K^+)

Dosage
– Adult: 15 to 25 mmol/day = 2 to 3 tablets/day in 2 to 3 divided doses
– Do not exceed indicated doses if potassium serum levels cannot be measured.

Duration
– According to clinical response and duration of diuretic treatment

Contra-indications, adverse effects, precautions
– Administer with caution and reduce dosage in elderly patients and in patients with renal impairment (risk of hyperkalaemia).
– Do not combine with spironolactone and angiotensin-converting-enzyme inhibitors (e.g. enalapril).
– May cause: hyperkalaemia, gastroduodenal ulcerations, diarrhoea, nausea and vomiting.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks
– Take with or at the end meals in order to reduce the risk of gastrointestinal ulcerations.
– Hypokalaemia is defined as a serum potassium concentration below 3.5 mmol/l.
– If tablets are not available, a lack of potassium may be corrected by a diet rich in dates, bananas, mangos, oranges, tomatoes, etc.
– *Storage: below 25°C –*

PRAZIQUANTEL

Prescription under medical supervision

Therapeutic action

– Anthelminthic

Indications

– Urinary (*S. haematobium*) and intestinal (*S. mansoni, S. japonicum, S. mekongi, S. intercalatum*) schistosomiasis
– Taeniasis (*T. saginata, T. solium, H. nana*)
– Pulmonary (*P. westermani*), hepatobiliary (*O. felineus, O. viverrini, C. sinensis*) and intestinal (*F. buski, H. heterophyes, M. yokogawai*) flukes

Presentation

– 150 mg and 600 mg tablets

Dosage and duration

Child over 2 years and adult:

– *Schistosomiasis*
  • *S. haematobium, S. mansoni, S. intercalatum*: 40 mg/kg as a single dose or in 2 divided doses administered 4 hours apart
  • *S. japonicum, S. mekongi*: 40 mg/kg as a single dose or 60 mg/kg in 2 to 3 divided doses administered 4 hours apart
– *Taeniase*
  • *T. saginata, T. solium*: 5 to 10 mg/kg as a single dose
  • *H. nana*: 25 mg/kg as a single dose
– *Fluke infections*
  • lung: 75 mg/kg/day in 3 divided doses for 2 to 3 days
  • hepatobiliary: 75 mg/kg/day in 3 divided doses for 1 to 2 days
  • intestinal: 75 mg/kg in 3 divided doses, 1 day

Contra-indications, adverse effects, precautions

– Do not administer to patients with ocular cysticercosis.
– May cause:
  • drowsiness, headache, gastrointestinal disturbances, dizziness; rarely: allergic reactions;
  • neurological disorders (headache, seizures) in patients with undiagnosed neurocysticercosis.
– *Pregnancy: no contra-indication for the treatment of schistosomiasis and taeniasis. If immediate treatment not considered essential for fluke infections, it should be delayed until after delivery.*
– *Breast-feeding: no contra-indication*

Remarks

– Praziquantel is not active against certain liver flukes (*Fasciola hepatica* and *gigantica*). For this indication, use triclabendazole.
– *Storage*:

PREDNISOLONE and PREDNISONE

Prescription under medical supervision

Therapeutic action

– Steroidal anti-inflammatory drug (corticosteroid)

Indications

– Symptomatic treatment of allergic and inflammatory diseases or reactions, e.g.:
  • *Pneumocystis carinii* (*jiroveci*) pneumonia with severe hypoxia
  • Certain severe forms of extra-pulmonary tuberculosis
  • Severe immune reconstitution syndrome, following initiation of antiretroviral or antituberculous treatment
  • Leprous neuropathy (especially reversal reaction)
  • Severe persistent asthma, in the event of treatment failure with high doses of inhaled corticoids
– Prevention of inflammatory reaction triggered by antiparasitic treatment (e.g. trichinellosis)

Presentation

– 5 mg tablet

Dosage

The dose depends on indication, patient's response and tolerance. If treatment lasts over 10 days, a high initial dose should be reduced as quickly as possible to the lowest effective maintenance dose.

– Child:
  • Initial dose: 0.5 to 2 mg/kg/day
  • Maintenance dose: 0.25 to 0.5 mg/kg/day
– Adult:
  • Initial dose: 20 to 70 mg/day
  • maintenance dose: 5 to 15 mg/day
– Administer preferably as a single daily dose, in the morning, with food.

Duration

– According to indication and clinical response. If the treatment lasts more than 3 weeks: do not stop abruptly, reduce the daily dose gradually.

Contra-indications, adverse effects, precautions

– Do not administer to patients with active peptic ulcer (except if ulcer under treatment); infections not controlled by a specific treatment; acute viral infection (e.g. hepatitis, herpes simplex or zoster).
– May cause (prolonged treatment with high doses): adrenal suppression, muscle atrophy, growth retardation, increased susceptibility to infections, hypokalaemia, sodium and water retention (oedema and hypertension), osteoporosis.
– In the event of acute adrenal failure, use IV hydrocortisone.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication; take tablets just after a feed and wait 4 hours before the next feed if possible.*

Remarks

– 5 mg of prednisolone has the same anti-inflammatory activity as 5 mg of prednisone, 0.75 mg of dexamethasone and 20 mg of hydrocortisone.
– *Storage: below 25°C –*

PROMETHAZINE

Prescription under medical supervision

Therapeutic action

– Sedating antihistamine

Indications

– Symptomatic treatment of minor allergic reactions (contact dermatitis, seasonal allergy, allergy to drugs, food, etc.)

Presentation

– 25 mg tablet

Also comes in 10 mg tablet and in 5 mg/5 ml syrup.

Dosage

– Child from 2 to 5 years: 10 mg/day in 2 divided doses or 5 to 15 mg once daily at bedtime
– Child from 5 to 10 years: 10 to 25 mg/day in 2 divided doses or once daily at bedtime
– Child over 10 years and adult: 25 to 75 mg/day in 3 divided doses or once daily at bedtime

Duration

– According to clinical response; single dose or for a few days

Contra-indications, adverse effects, precautions

– Do not administer to patients with prostate disorders or closed-angle glaucoma and to children less than 2 years.
– Administer with caution and monitor use in patients > 60 years and in children (risk of agitation, excitability).
– May cause: drowsiness (caution when driving/operating machinery), anticholinergic effects (dry mouth, blurred vision, constipation, tachycardia, disorders of micturition), headache, tremor, allergic reactions.
– Monitor combination with CNS depressants (opioid analgesics, antipsychotics, sedatives, antidepressants, etc.) and drugs known to have anticholinergic effects (amitryptiline, atropine, chlorpromazine, clomipramine, etc.).
– Avoid alcohol during treatment.
– *Pregnancy: avoid at the end of pregnancy; NO PROLONGED TREATMENT*
– *Breast-feeding: no contra-indication; monitor the child for excessive somnolence.*

Remarks

– *Storage: below 25°C*

PYRANTEL

Therapeutic action

- Anthelminthic

Indications

- Ascariasis
- Enterobiasis
- Ancylostomiasis
- Trichinellosis

Presentation

- 250 mg pyrantel embonate chewable tablet
- Oral suspension, 50 mg pyrantel embonate per ml

Dosage and duration

- *Ascariasis*
  Child and adult: 10 mg/kg as a single dose
- *Enterobiasis*
  Child and adult: 10 mg/kg as a single dose followed by a second dose after 2 to 4 weeks
- *Ancylostomiasis*
  Child and adult: 10 mg/kg as a single dose; in severe infection, 10 mg/kg once daily for 4 days
- *Trichinellosis*
  Child and adult: 10 mg/kg once daily for 5 days

Contra-indications, adverse effects, precautions

- May cause: gastrointestinal disturbances, headache, dizziness, drowsiness, skin rash.
- Reduce dosage in patients with hepatic impairment.
- *Pregnancy: avoid during the first trimester*
- *Breast-feeding: no contra-indication*

Remarks

- Preferably use albendazole or mebendazole for these indications. However, when these drugs are contra-indicated, e.g. in children under one year, pyrantel is an alternative.
- *Storage:*

PYRAZINAMIDE = Z

Prescription under medical supervision

Therapeutic action
– First line antituberculous antibacterial (sterilising and bactericidal activity)

Indications
– Tuberculosis, in combination with other antituberculous antibacterials

Presentation
– 400 mg tablet

Dosage
– Child under 30 kg: 35 mg/kg (30 to 40 mg/kg/day) once daily
– Child over 30 kg and adult: 25 mg/kg (20 to 30 mg/kg/day) once daily
– Maximum dose: 2 g/day

Duration
– According to protocol

Contra-indications, adverse effects, precautions
– Do not administer to patients with hypersensitivity to pyrazinamide, severe hepatic impairment or severe gout.
– Reduce the dose in patients with renal impairment (25 mg/kg/dose 3 times per week).
– May cause: gout and arthralgias, hepatic disorders (jaundice), photosensitivity (limit sun exposure), rash, gastrointestinal disturbances, hypersensitivity reactions.
– If signs of hepatotoxicity (e.g. jaundice) develop, pyrazinamide should be discontinued until symptoms resolve.
– *Pregnancy: safety of pyrazinamide in the first trimester is not definitely established. However, given the severity of the disease, it may be used during pregnancy.*
– *Breast-feeding: no contra-indication*

Remarks
– Pyrazinamide is included in the WHO Group 1 antituberculous agents.
– For patients on first-line antituberculous treatment, pyrazinamide is given as part of a fixed dose combination (isoniazid+rifampicin+pyrazinamide+ethambutol or isoniazid+ rifampicin+ pyrazinamide).
– *Storage: below 25°C* – –

PYRIDOXINE = VITAMIN B6

Therapeutic action

– Vitamin

Indications

– Prevention and treatment of isoniazid-induced peripheral neuropathy

Presentation

– 25 mg tablet

Also comes in 10 mg and 50 mg tablets.

Dosage

– *Prevention of isoniazid neuropathy*
  Child under 5 kg: 5 mg once daily
  Child over 5 kg and adult: 10 mg once daily
– *Treatment of isoniazid neuropathy*
  Child: 50 mg once daily
  Adult: 150 mg/day in 3 divided doses

Duration

– *Prevention*: as long as treatment with isoniazid continues.
– *Treatment*: according to clinical response (in general, ≤ 3 weeks) then, preventive dose, as long as treatment with isoniazid continues.

Contra-indications, adverse effects, precautions

– No contra-indication.
– May cause: peripheral neuropathy in the event of prolonged use with doses ≥ 200 mg/day.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– In children receiving isoniazid prophylaxis or treatment for tuberculosis: concomitant administration of pyridoxine at preventive dosage is recommended for children under 5 years and all children infected with HIV.
– Pyridoxine is also used for the prevention and treatment of cycloserin-induced neuropathy (150 to 200 mg/day in adults, in divided doses).
– *Storage:*

PYRIMETHAMINE



Prescription under medical supervision

Therapeutic action

– Antiprotozoal

Indications

– Treatment and secondary prophylaxis of toxoplasmosis in immunodeficient patients, in combination with sulfadiazine or clindamycin
– Primary prophylaxis of toxoplasmosis in immunodeficient patients, in combination with dapsone (only if cotrimoxazole cannot be used)
– Second-line treatment of isosporiasis in immunodeficient patients (only if cotrimoxazole cannot be used)

Presentation

– 25 mg tablet

Dosage and duration

– *Treatment of toxoplasmosis*
  Adult: 200 mg in 2 divided doses on the first day, then 75 to 100 mg/day for at least 6 weeks
– *Secondary prophylaxis of toxoplasmosis*
  Adult: 25 to 50 mg/day, as long as necessary
– *Primary prophylaxis of toxoplasmosis*
  Adult: 50 to 75 mg/week, as long as necessary
– *Treatment of isosporiasis*
  Adult: 50 to 75 mg/day for 10 days

Contra-indications, adverse effects, precautions

– Do not administer to patients with severe renal or hepatic impairment.
– May cause: gastrointestinal disturbances, seizures, leucopenia, thrombocytopenia, megaloblastic anaemia due to folinic acid deficiency.
– Administer calcium folinate to prevent folinic acid deficiency.
– Avoid if possible combination with other folate antagonists: cotrimoxazole, methotrexate (increased risk of folinic acid deficiency).
– Monitor combination with zidovudine (increased risk of zidovudine-associated haematotoxicity).
– *Pregnancy*: ***CONTRA-INDICATED*** *during the first trimester*
– *Breast-feeding: no contra-indication; however avoid concomitant administration of other folate antagonists.*

Remarks

– The combination of sulfadoxine/pyrimethmine is used for the treatment of uncomplicated falciparum malaria.
– *Storage: below 25°C*

QUININE

Prescription under medical supervision

Therapeutic action

– Antimalarial

Indicatio

– Treatment of uncomplicated falciparum malaria
– Completion treatment following parenteral therapy with quinine for severe falciparum malaria

Presentation

– 300 mg quinine sulfate tablet

Dosage and duration

– Dosage is expressed in terms of salt. With the exception of quinine bisulfate, the dosage is the same for all quinine salts (sulfate, hydrochloride, dihydrochloride):
Child and adult < 50 kg: 30 mg/kg/day in 3 divided doses at 8-hour intervals for 7 days
Adult ≥ 50 kg: 1800 mg/day in 3 divided doses at 8-hour intervals for 7 days

Age	Weight	300 mg tablet
5 months to < 2 years	7 to < 12 kg	¼ tab x 3
2 to < 8 years	12 to < 25 kg	½ tab x 3
8 to < 11 years	25 to < 35 kg	1 tab x 3
11 to < 14 years	35 to < 50 kg	1½ tab x 3
≥ 14 years	≥ 50 kg	2 tab x 3

Contra-indications, adverse effects, precautions

– May cause: headache, skin rash; visual, auditory and gastrointestinal disturbances.
– Do not exceed indicated doses: risk of toxicity in the event of overdose.
– If the patient vomits within one hour after administration, repeat the full dose.
– Do not combine with chloroquine, halofantrine and mefloquine.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– 10 mg of quinine sulfate or hydrochloride or dihydrochloride = 8 mg of quinine base; 14 mg of quinine bisulfate = 8 mg of quinine base.
– In pregnant women, quinine is administered in combination with clindamycin.
– Quinine should not be used for prophylaxis.
– The 300 mg tablets are not suitable for use in children under 5 months.
– *Storage: below 25°C –*

ReSoMal
Rehydration **So**lution for **Mal**nutrition

Prescription under medical supervision

Therapeutic action
– Oral rehydration salts with high potassium and low sodium contents

Indications
– Prevention and treatment of dehydration, in patients suffering from complicated acute malnutrition only

Presentation
– Sachet containing 84 g of powder, to be diluted in 2 litres of clean, boiled and cooled water
– Sachet containing 420 g of powder, to be diluted in 10 litres of clean, boiled and cooled water

Composition for one litre:

	mmol/litre		mmol/litre
Glucose	55	Citrate	7
Saccharose	73	Magnesium	3
Sodium	45	Zinc	0.3
Potassium	40	Copper	0.045
Chloride	70	Osmolarity	294 mEq/litre

Dosage and duration
– *Prevention of dehydration*
Child under 2 years: 50 to 100 ml after each loose stool as long as diarrhoea persists
Child over 2 years: 100 to 200 ml after each loose stool as long as diarrhoea persists
Adult: 200 to 400 ml after each loose stool as long as diarrhoea persists
– *Treatment of dehydration*
Child and adult: 5 ml/kg every 30 minutes over the first 2 hours, then 5 to 10 ml/kg/hour for the next 4 to 10 hours, until dehydration is corrected.

Contra-indications, adverse effects, precautions
– Do not administer to patients with cholera or uncomplicated acute malnutrition: use standard ORS instead.
– May cause: heart failure when administered too rapidly. During treatment, closely monitor the rate of administration in order to avoid overhydration. Increase in respiratory and pulse rates and appearance or increase of oedema are signs of over rapid rehydration. In this event, stop ReSoMal for one hour then reassess the patient's condition.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks
– *Storage: below 25°C –* ☼ – ☂
Do not use the powder if it has turned sticky.
Once prepared, the solution should be used within 24 hours.

RETINOL = VITAMIN A

Therapeutic action

– Vitamin

Indications

– Prevention of vitamin A deficiency
– Treatment of vitamin A deficiency (xerophthalmia)

Presentation

– 200 000 IU capsule

Also comes in 10 000 IU coated tablet, 100 000 IU capsule and 100 000 IU/ml oral solution.

Dosage and duration

– *Prevention of vitamin A deficiency*
  Child under 6 months: 50 000 IU as a single dose
  Child from 6 to 12 months: 100 000 IU as a single dose every 4 to 6 months
  Child over 1 year: 200 000 IU as a single dose every 4 to 6 months
– *Treatment of vitamin A deficiency*
  Child under 6 months: 50 000 IU once daily on D1, D2 and D8 (or D15)
  Child from 6 to 12 months: 100 000 IU once daily on D1, D2 and D8 (or D15)
  Child over 1 year and adult: 200 000 IU once daily on D1, D2 and D8 (or D15)

Age	200 000 IU capsule	
	Prevention	Treatment
< 6 months	2 drops	2 drops
6 months to < 1 year	4 drops	4 drops
1 to < 5 years	1 cap	1 cap
≥ 5 years and adult	–	1 cap

Contra-indications, adverse effects, precautions

– Do not exceed indicated doses.
– Overdosage may cause: gastrointestinal disturbances, headache, raised intracranial pressure (bulging fontanelle in infants); foetal abnormalities.
– Pregnancy:
  Prevention: after delivery only, 200 000 IU as a single dose
  Treatment: dosage depends on severity of eye lesions:
  - *Night blindness and Bitot's spots: 10 000 IU once daily or 25 000 IU once weekly for at least 4 weeks*
  - *Corneal lesion: 200 000 IU once daily on D1, D2 and D8 (or D15)*
– Breast-feeding: *no contra-indication at recommended doses*

Remarks

– Administer routinely 2 doses (on D1 and D2) to children suffering from measles to prevent the complications of measles.
– One 200 000 IU capsule contains about 8 drops (1 drop = 25 000 IU).
– Storage: *below 25°C –*

RIFAMPICIN = R

Prescription under medical supervision

Therapeutic action

– First line antituberculous antibacterial (sterilising and bactericidal activity)
– Antileprotic antibacterial (bactericidal activity)

Indications

– Tuberculosis, in combination with other antituberculous antibacterials
– Paucibacillary leprosy, in combination with dapsone
– Multibacillary leprosy, in combination with dapsone and clofazimine

Presentation

– 150 mg and 300 mg tablets or capsules

Dosage

– *Tuberculosis*
  Child under 30 kg: 15 mg/kg (10 to 20 mg/kg/day) once daily, on an empty stomach
  Child over 30 kg and adult: 10 mg/kg (8 to 12 mg/kg/day) once daily, on an empty stomach
  Maximum dose: 600 mg/day
– *Paucibacillary and multibacillary leprosy*
  Child under 10 years: 12 to 15 mg/kg once monthly, on an empty stomach
  Child from 10 to 14 years: 450 mg once monthly, on an empty stomach
  Adult: 600 mg once monthly, on an empty stomach

Duration

– *Tuberculosis*: according to protocol; *paucibacillary leprosy*: 6 months; *multibacillary leprosy*: 12 months

Contra-indications, adverse effects, precautions

– Do not administer to patients with jaundice, hypersensitivity to rifamycins or history of severe haematological disorders (thrombocytopenia, purpura) during a previous treatment with rifamycins.
– Avoid or administer with caution to patients with hepatic impairment (do not exceed 8 mg/kg/day).
– May cause:
  • orange-red discoloration of body secretions (urine, tears, saliva, sputum, sweat, etc.), normal, harmless;
  • gastrointestinal disturbances, headache, drowsiness, hepatic disorders;
  • influenza-like syndrome (more frequent when treatment is not taken regularly);
  • thrombocytopenia, hypersensitivity reactions.
– If signs of hepatotoxicity (e.g. jaundice) develop, rifampicin should be discontinued until symptoms resolve.
– In patients taking nevirapine, indinavir, nelfinavir, lopinavir/ritonavir, atazanavir/ritonavir, use rifabutin in place of rifampin.
– Rifampicin reduces the effect of many drugs (antimicrobials, some hormones, antidiabetics, corticoids, phenytoin, etc.):
  • In women, use a non-hormonal contraception or injectable medroxyprogesterone or, as a last resort, use an oral contraceptive containing 50 µg ethinylestradiol per tablet.
  • In the event of concomitant fluconazole administration, administer each drug 12 hours apart (rifampicin in the morning, fluconazole in the evening).
  • For the other drugs, adjust dosage if necessary.
– *Pregnancy: no contra-indication. Risk of maternal and neonatal bleeding disorders when the mother receives rifampicin in late pregnancy: administer phytomenadione (vitamin K) to the mother and the newborn to reduce the risk.*
– *Breast-feeding: no contra-indication*

Remarks

– Rifampicin is included in the WHO Group 1 antituberculous agents.
– For patients on first-line antituberculous treatment, rifampicin is given as part of a fixed dose combination (isoniazid+rifampicin+ pyrazinamide+ethambutol or isoniazid+rifampicin+ pyrazinamide or isoniazid+rifampicin).
– For the treatment of *single skin lesion* paucibacillary leprosy, rifampicin (600 mg) + ofloxacin (400 mg) + minocycline (100 mg) are administered as a single dose.
– Rifampicin is also used in combination with co-trimoxazole for the treatment of brucellosis in children < 8 years and pregnant/breastfeeding women.
– *Storage: below 25°C –* –

RISPERIDONE



Prescription under medical supervision

Therapeutic action

– Atypical antipsychotic

Indications

– Acute or chronic psychosis
– Acute moderate to severe manic episode

Presentation

– 1 mg tablet

Dosage

– *Acute or chronic psychosis*
  Adult: 2 mg in 2 divided doses on Day 1 then 4 mg/day in 2 divided doses as of Day 2
  The dose may be increased to 6 mg/day in 2 divided doses if needed.
– *Acute moderate to severe manic episode*
  Adult: 2 mg once daily; increase if necessary in steps of 1 mg/day (max. 6 mg/day)
– Reduce the doses by half (initial and incremental doses) in elderly patients and in patients with hepatic or renal impairment (max. 4 mg/day).

Duration

– *Acute psychosis*: minimum 3 months; *chronic psychosis*: minimum one year. The treatment should be discontinued gradually (over 4 weeks). If signs of relapse occur, increase the dose.
– *Manic episode*: 3 to 6 weeks

Contra-indications, adverse effects, precautions

– Do not administer to elderly patients with dementia (e.g. Alzheimer's disease).
– Administer with caution and monitor use in patients > 60 years and patients with Parkinson's disease, cardiac, hepatic or renal impairment.
– May cause: orthostatic hypotension, hyperprolactinaemia, sexual dysfunction, extrapyramidal syndrome, tachycardia, headache, nausea, agitation, anxiety, insomnia, drowsiness (inform patients that it may affect their capacity to drive/operate machinery); neuroleptic malignant syndrome (unexplained hyperthermia with neuromuscular disorders), rare but requiring immediate treatment discontinuation.
– In the event of extrapyramidal symptoms, combine with biperiden.
– Avoid or monitor combination with: fluoxetine, carbamazepine, rifampicin, furosemide, antihypertensives, CNS depressants (opioid analgesics, sedatives, H1 antihistamines, etc.).
– Avoid alcohol during treatment.
– *Pregnancy: re-evaluate whether the treatment is still necessary; if it is continued, haloperidol or chlorpromazine are in principle preferred as they are better known. However, if it is difficult to change treatment at the beginning of pregnancy or if pregnancy is already in second trimester, risperidone can be maintained. Observe the newborn infant the first few days (risk of hypertonia, tremors, sedation).*
– *Breast-feeding: no contra-indication*

Remarks

– Atypical antipsychotics such as risperidone are less likely to cause extra-pyramidal adverse effects than conventional antipsychotics.
– Risperidone is not included in the WHO list of essential medicines.
– *Storage: below 25°C*

RITONAVIR = RTV

Prescription under medical supervision

Therapeutic action

– Antiretroviral, HIV-1 and HIV-2 protease inhibitor

Indications

– Booster for protease inhibitors (atazanavir, darunavir, saquinavir, etc.) in HIV-1 or HIV-2 infection. Ritonavir should not be used alone.

Presentation

– 50 mg and 100 mg tablets
– 80 mg/ml oral solution, containing 43% alcohol (v/v)

Dosage

– Adult:
  • Tablet: 100 mg once daily or 200 mg/day in 2 divided doses, depending on the protease inhibitor co-administered
  • Oral solution: 1.25 ml once daily or 2.5 ml/day in 2 divided doses, depending on the protease inhibitor co-administered

Duration

– Depending on the efficacy and tolerance of ritonavir.

Contra-indications, adverse effects, precautions

– Do not administer to patients with severe hepatic impairment.
– Adverse effects associated with the use of ritonavir as a booster are dependent on the other protease inhibitor.
– Ritonavir reduces the efficacy of oral contraceptives: use a non-hormonal contraception or injectable medroxyprogesterone or an oral contraceptive containing 50 µg ethinylestradiol per tablet.
– Administer with caution to patients with diabetes or haemophilia and, for oral solution, to patients with hepatic disease or epilepsy.
– *Pregnancy*: ***CONTRAINDICATED*** *for oral solution; no contra-indication for tablets.*

Remarks

– Take with meals.
– Many fixed-dose combinations containing ritonavir are available.
– *Storage: below 25°C*
  Do not refrigerate or freeze the oral solution.

SALBUTAMOL = ALBUTEROL

Prescription under medical supervision

Therapeutic action
– Bronchodilator

Indications
– Treatment of persistent asthma not controlled by inhaled corticosteroids

Presentation
– 2 mg and 4 mg tablets
– 2 mg/5 ml syrup

Dosage
– Child from 2 to 6 years: 3 to 6 mg/day in 3 divided doses
– Child from 6 to 12 years: 6 mg/day in 3 divided doses
– Child over 12 years and adult: 6 to 12 mg/day in 3 divided doses

Duration
– According to clinical response

Contra-indications, adverse effects, precautions
– Administer with caution to patients with diabetes mellitus, hyperthyroidism, arrhythmia, angina, hypertension.
– May cause: headache, tremor, tachycardia; hypokalaemia, hyperglycaemia.
– Monitor combination with: furosemide, hydrochlorothiazide, corticosteroids, xanthines (increased risk of hypokalaemia).
– *<u>Pregnancy</u>: no contra-indication*
– *<u>Breast-feeding</u>: no contra-indication*

Remarks
– The use of oral salbutamol for this indication should only be considered when administration of inhalated salbutamol is not feasible.
– Oral salbutamol is not very effective in children under 2 years.
– Oral salbutamol is not indicated in the management of acute asthma attack since its onset of action is within 30 minutes.
– *<u>Storage</u>: below 25°C –*

SALBUTAMOL = ALBUTEROL aerosol

Prescription under medical supervision

Therapeutic action

– Short-acting bronchodilator

Indications

– Symptomatic treatment of asthma attack

Presentation

– Solution for inhalation in pressurised metered dose inhaler, 100 micrograms/puff

Dosage

Dosage depends on the severity of attack and patient’s response.
For information :
– 2 to 4 puffs (up to 10 puffs depending on severity) every 10 to 30 minutes

Administration technique

– Shake the inhaler.
– Breathe out as completely as possible. Place the lips tightly around the mouthpiece. Inhale deeply while activating the inhaler. Hold breath 10 seconds before exhaling.
– Co-ordination between the hand and inhalation is very difficult in children under 6 years, elderly patients and patients with severe dyspnoea. Use a spacer to facilitate administration and improve the efficacy of treatment.

Contra-indications, adverse effects, precautions

– May cause: headache, tremor and tachycardia.
– In the event of bronchial infection, administer simultaneously with appropriate antibacterial treatment.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Clean the mouthpiece before and after each use.
– Do not pierce or incinerate used aerosol containers. Empty all residual gas, then bury.
– *Storage: below 25°C –*

SALBUTAMOL = ALBUTEROL nebuliser solution



Prescription under medical supervision

Therapeutic action

– Short-acting bronchodilator

Indications

– Symptomatic treatment of severe acute bronchospasm, e.g. in severe asthma attack

Presentation and route of administration

– Solution for inhalation, in unit dose vial of 5 mg in 2.5 ml (2 mg/ml), to be administered via a nebuliser

Dosage and duration

– Child under 5 years or under 15 kg: 2.5 mg (1.25 ml)/nebulisation, to be repeated every 20 to 30 minutes if necessary
– Child over 5 years and adult: 2.5 to 5 mg (1.25 to 2.5 ml)/nebulisation, to be repeated every 20 to 30 minutes if necessary
– The nebuliser should always be driven by oxygen.

Contra-indications, adverse effects, precautions

– May cause: headache, tremor, tachycardia; hyperglycaemia and hypokalaemia (after large doses); worsening hypoxia if administered without oxygen.
– Never use nebuliser solution by the parenteral route.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Nebulised salbutamol should be reserved for severe asthma attacks when inhalation of oxygen is also required. Otherwise, salbutamol should be delivered via a metered-dose inhaler with a spacer: administration is easier and faster, the treatment is as effective, or even more effective, than with a nebuliser and causes fewer adverse effects.
– Volumes of nebuliser solution to be administered are insufficient to obtain efficient nebulisation in most nebulisers: dilute salbutamol solution with 0.9% NaCl to obtain a total volume of 4 ml in the reservoir of the nebuliser. The diluted solution is dispersed with oxygen at a flow rate of 5 to 8 litres/min. Stop the nebulisation when the reservoir is empty (± 10-15 minutes).
– Also comes in unit dose vials of 1.25 mg in 2.5 ml, 2.5 mg in 2.5 ml, and in vials of 50 mg in 10 ml.
– *Storage: below 25°C –*

SPIRONOLACTONE

Prescription under medical supervision

Therapeutic action

– Potassium-sparing diuretic, antagonist of aldosterone

Indications

– Oedema associated with congestive heart failure, hepatic cirrhosis and nephrotic syndrome

Presentation

– 25 mg tablet

Dosage

– *Oedema in congestive heart failure*
  Adult: 100 mg/day (up to 200 mg/day in severe cases) then, when oedema is controlled, maintenance dose of 25 mg/day
– *Ascites in hepatic cirrhosis*
  Adult: 100 to 400 mg/day.
  When weight is stable, administer the lowest possible maintenance dose, in order to prevent adverse effects.
– *Oedema in nephrotic syndrome*
  Adult: 100 to 200 mg/day

The daily dose can be administered in 2 to 3 divided doses or once daily.

Duration

– According to clinical response; avoid prolonged use.

Contra-indications, adverse effects, precautions

– Do not administer to patients with severe renal impairment, anuria, hyperkalaemia > 5 mmol/l, hyponatraemia.
– Do not combine with potassium salts, potassium-sparing diuretics; lithium (risk of lithium toxicity).
– Avoid or closely monitor combination with angiotensin-converting enzyme inhibitors (risk of severe, potentially fatal hyperkalaemia), digoxin (risk of digoxin toxicity) and reduce dosages.
– May cause:
  • hyperkalaemia (especially in elderly or diabetics patients, patients with renal impairment or patients taking NSAIDs), hyponatraemia; metabolic acidosis (in patients with decompensated cirrhosis);
  • gynecomastia, metrorrhagia, impotence, amenorrhoea, gastrointestinal disturbances, headache, skin rash, drowsiness.
– Administer with caution in patients with hepatic or renal impairment or diabetes.
– Monitor regularly plasma-potassium levels.
– *Pregnancy: avoid, use only if clearly needed (risk of feminisation of foetus); spironolactone is not indicated in the treatment of pregnancy-related oedema.*
– *Breast-feeding: no contra-indication*

Remarks

– In children with oedema, the daily dose is 1 to 3 mg/kg/day.
– Spironolactone is also used for the diagnosis and treatment of primary hyperaldosteronism.
– *Storage: below 25°C –*

SULFADIAZINE

Prescription under medical supervision

Therapeutic action

– Sulfonamide antibacterial

Indications

– Treatment and secondary prophylaxis of toxoplasmosis in immunodeficient patients, in combination with pyrimethamine

Presentation

– 500 mg tablet

Dosage and duration

– *Treatment of toxoplasmosis*
  Adult: 4 to 6 g/day in 2 to 3 divided doses for 6 weeks minimum
– *Secondary prophylaxis of toxoplasmosis*
  Adult: 2 to 3 g/day in 2 divided doses, as long as necessary

Contra-indications, adverse effects, precautions

– Do not administer to sulfonamide-allergic patients; patients with severe renal or hepatic impairment.
– May cause:
  • gastrointestinal disturbances, renal disorders (crystalluria, etc.), photosensitivity, megaloblastic anaemia due to folinic acid deficiency; haemolytic anaemia in patients with G6PD deficiency;
  • allergic reactions (fever, rash, etc.) sometimes severe (Lyell's and Stevens-Johnson syndromes, haematological disorders, etc.). In these cases, stop treatment immediately.
– Adverse effects occur more frequently in patients with HIV infection.
– Monitor blood count if possible.
– Reduce the dose by half in patients with renal impairment.
– Do not combine with methotrexate and phenytoin.
– Administer calcium folinate systematically to prevent folinic acid deficiency.
– Drink a lot of liquid during treatment.
– *Pregnancy: no contra-indication. However, avoid using during the last month of pregnancy (risk of jaundice and haemolytic anaemia in the newborn infant).*
– *Breast-feeding: avoid if premature infant, jaundice, low-birth weight, infant under one month of age. If sulfadiazine is used, observe the infant for signs of jaundice.*

Remarks

– *Storage*:

SULFADOXINE/PYRIMETHAMINE = SP

Prescription under medical supervision

Therapeutic action

– Antimalarial

Indications

– Treatment of uncomplicated falciparum malaria, in combination with artesunate
– Completion treatment following parenteral therapy for severe falciparum malaria, in combination with artesunate

Presentation

– Sulfadoxine 500 mg/pyrimethamine 25 mg co-formulated tablet

Dosage and duration

– Child and adult: 25 mg/kg sulfadoxine and 1.25 mg/kg pyrimethamine as a single dose

Age	**2 months**	**1 year**	**7 years**	**13 years**	**Adult**
500/25 mg tablet		½ tab	1 tab	2 tab	3 tab

Contra-indications, adverse effects, precautions

– Do not administer to patients with allergy to sulfonamides.
– May cause: gastrointestinal disturbances; allergic reactions, sometimes severe (toxic epidermal necrolysis and Stevens-Johnson syndrome); anaemia, leukopenia, agranulocytosis, thrombocytopenia, haemolytic anaemia in patients with G6PD deficiency.
– Do not use in combination with cotrimoxazole.
– Do not give folic acid on the same day SP is administered, or within 15 days thereafter.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– In stable transmission areas, intermittent preventive treatments can be given to pregnant women as of the 2nd trimester to reduce the consequences of malaria (anaemia, low birth weight, etc.). Check national recommendations.
– SP should not be used for malaria prophylaxis.
– *Storage: below 25°C –*

THIAMINE = VITAMIN B1

Therapeutic action

– Vitamin

Indications

– Vitamin B1 deficiencies: beriberi, alcoholic neuritis

Presentation

– 50 mg tablet

Also comes in 10 mg and 25 mg tablets.

Dosage and duration

– *Infantile beriberi*
  10 mg once daily, until complete recovery (3 to 4 weeks)
– *Acute beriberi*
  150 mg/day in 3 divided doses for a few days, until symptoms improve, then 10 mg/day until complete recovery (several weeks)
– *Mild chronic deficiency*
  10 to 25 mg once daily

Contra-indications, adverse effects, precautions

– No contra-indication, or adverse effects with oral thiamine.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– In the treatment of severe cases, the use of injectable thiamine is justified to correct the disorder as rapidly as possible, but is no longer justified when symptoms have improved.
– Vitamin B1 deficiency often occurs in association with other vitamin B-complex deficiencies, especially in alcoholic patients.
– Thiamine is also called aneurine.
– *Storage: in airtight non-metallic container –*

TINIDAZOLE

Prescription under medical supervision

Therapeutic action

– Antiprotozoal, antibacterial (group of nitroimidazoles)

Indications

– Amoebiasis, giardiasis, trichomoniasis
– Bacterial vaginitis, infections due to anaerobic bacteria (e.g. *Clostridium sp*, *Bacteroides sp*)

Presentation

– 500 mg tablet

Dosage and duration

– *Amoebiasis*
Child: 50 mg/kg once daily, without exceeding 2 g/day
Adult: 2 g once daily
The treatment lasts 3 days in intestinal amoebiasis; 5 days in hepatic amoebiasis.
– *Giardiasis, trichomoniasis and bacterial vaginitis*
Child: 50 mg/kg as a single dose, without exceeding 2 g
Adult: 2 g as a single dose
In the event of trichomoniasis, also treat sexual partner.
– *Infections due to anaerobic bacteria*
Child over 12 years and adult: initially 2 g then 1 g once daily or in 2 divided doses
According to indication, tinidazole may be used in combination with other antibacterials; treatment duration depends on indication.

Contra-indications, adverse effects, precautions

– Do not administer to patients with allergy to tinidazole or another nitroimidazole (metronidazole, secnidazole, etc.).
– May cause: gastrointestinal disturbances; rarely: allergic reactions, brownish urine, headache, dizziness. Risk of antabuse reaction when combined with alcohol.
– Administer with caution in patients taking oral anticoagulants (risk of haemorrhage), lithium, phenytoin (increased plasma concentrations of these drugs).
– <u>*Pregnancy*</u>*: no contra-indication; divide into smaller doses, avoid prolonged use.*
– <u>*Breast-feeding*</u>*: significantly excreted in milk (risk of gastrointestinal disturbances in breastfed infants); divide into smaller doses, avoid prolonged use.*

Remarks

– <u>*Storage*</u>*: below 25°C –*

TRAMADOL



Prescription under medical supervision

Therapeutic action

– Centrally acting analgesic (weak opioid, serotonin-norepinephrine reuptake inhibitor)

Indications

– Moderate acute pain and moderate to severe chronic pain

Presentation

– 50 mg capsule
– 100 mg/ml oral solution

Dosage

– Child over 6 months: 2 mg/kg every 6 hours
– Adult: 50 to 100 mg every 4 to 6 hours, without exceeding 400 mg/day

Duration

– According to clinical evolution. In the event of prolonged treatment, do not stop abruptly, reduce doses progressively.

Contra-indications, adverse effects, precautions

– Do not administer in the event of severe respiratory depression and to patients that risk seizures (e.g. epilepsy, head injury, meningitis).
– May cause:
  • dizziness, nausea, vomiting, drowsiness, dry mouth, sweating;
  • rarely: allergic reactions, seizures, confusion;
  • exceptionally: withdrawal symptoms; respiratory depression in the event of overdosage.
– Do not combine with opioid analgesics, including codeine.
– Avoid combination with carbamazepine, fluoxetine, chlorpromazine, promethazine, clomipramine, haloperidol, digoxin.
– Reduce doses (1 mg/kg) and administer every 12 hours in elderly patients and in patients with severe renal or hepatic impairment (risk of accumulation).
– *Pregnancy and breast-feeding: no contra-indication. The child may develop adverse effects (drowsiness) when the mother receives tramadol at the end of the 3rd trimester and during breast-feeding. In these events, administer with caution, for a short period, at the lowest effective dose, and monitor the child.*

Remarks

– Oral solution is available in bottle containing 20 drops/ml (1 drop = 5 mg) and 40 drops/ml (1 drop = 2.5 mg).
– Doses administered for the treatment of neuropathic pain are often lower than those administered for the treatment of acute pain.
– Tramadol is approximately 10 times less potent than morphine.
– In some countries, tramadol is on the list of narcotics: follow national regulations.
– *Storage: below 25°C* – ☼ – ☂

TRANEXAMIC acid

Prescription under medical supervision

Therapeutic action
– Antifibrinolytic

Indications
– Metrorrhagia (especially functional uterine bleeding) and menorrhagia

Presentation
– 500 mg tablet

Dosage
– Adult: 3 g/day in 3 divided doses (max. 4 g/day in 4 doses) during bleeding

Duration
– 3 to 5 days

Contra-indications, adverse effects, precautions
– Do not administer in patients with (or with history of) venous or arterial thromboembolic disease.
– Administer with caution in the event of haematuria of renal origin (risk of anuria).
– May cause: gastrointestinal disturbances; rarely, allergic reactions, seizures.
– *Pregnancy: this drug is not indicated in the event of bleeding during pregnancy.*
– *Breast-feeding: no contra-indication*

Remarks
– The treatment may given at each bleeding episode. In situations of repeated bleeding, it may be helpful to combine tranexamic acid with a non-steroidal anti-inflammatory drug (oral ibuprofen, 1200 to 2400 mg/daily maximum, to be divided in 3 doses for 3 to 5 days) and/or a long-term treatment with oral estroprogestogens or injectable progestogens.
– *Storage: below 25°C*

TRICLABENDAZOLE

Prescription under medical supervision

Therapeutic action

– Anthelminthic

Indications

– Fascioliasis (*Fasciola hepatica* and *Fasciola gigantica* infections)
– Paragominiasis

Presentation

– 250 mg tablet

Dosage and duration

– *Fascioliasis*
  Child and adult: 10 mg/kg as a single dose
– *Paragominiasis*
  Child and adult: 20 mg/kg in 2 divided doses

Contra-indications, adverse effects, precautions

– Do not administer to patients with hypersensitivity to triclabendazole or other benzimidazoles (albendazole, flubendazole, mebendazole, tiabendazole).
– May cause: abdominal pain, mild fever, headache, dizziness.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Take tablets after meals.
– Due to its efficacy, good tolerance, and ease of administration, triclabendazole is the drug of choice for fascioliasis.
– Bithionol may be used as an alternative to triclabendazole in the treatment of fascioliasis: 30 mg/kg/day for 5 days.
– Unlike infections with other flukes, fascioliasis does not respond to praziquantel.
– *Storage: below 25°C –*

VALPROIC acid = SODIUM VALPROATE



Prescription under medical supervision

Valproic acid should not be used during pregnancy and in women of childbearing age. The risk of foetal malformations is higher than with other antiepileptics.

Therapeutic action

– Antiepileptic

Indications

– Generalised and partial epilepsy

Presentation

– 200 mg and 500 mg enteric coated tablets

Dosage

– Child under 20 kg: 20 mg/kg/day in 2 divided doses
– Child over 20 kg: start with 400 mg (irrespective of weight) in 2 divided doses, then increase gradually until the individual optimal dose is reached, usually 20 to 30 mg/kg/day in 2 divided doses
– Adult: start with 600 mg/day in 2 divided doses, then increase by 200 mg every 3 days until the individual optimal dose is reached, usually 1 to 2 g/day in 2 divided doses

Duration

– Lifetime treatment

Contra-indications, adverse effects, precautions

– Do not administer:
  • to women of childbearing age. If the treatment is absolutely necessary and if there is no alternative, an effective contraception is required (intrauterine device);
  • to patients with pancreatitis, hepatic disease or history of hepatic disease.
– May cause:
  • increase in the frequency of seizures at the beginning of therapy, drowsiness, weight gain, amenorrhoea, gastrointestinal disturbances, extrapyramidal symptoms, behavioural disturbances, confusion, thrombocytopenia;
  • rarely: pancreatitis, hepatic disorders, severe allergic reactions (Lyell's and Stevens-Johnson syndromes), prolongation of bleeding time. In these cases, stop treatment.
– Monitor, if possible, liver transaminases and prothrombin time during first 3-6 months of therapy (risk of hepatitis).
– Reduce dosage in patients with renal impairment.
– Do not combine with mefloquine (increased risk of seizures).
– Monitor combination with: tricyclic antidepressants, other antiepileptics.
– If other antiepileptics have been prescribed, increase the dose of valproic acid gradually over 2 weeks and reduce the dose of other antiepileptics.
– *Pregnancy: do not start treatment during pregnancy (risk of neural tube defects; urogenital, limb and face malformations; psychomotor developmental disorders).*
  If treatment has been started before pregnancy: do not stop treatment, administer the minimal effective dose and divide the daily dose. Monitor the newborn (risk of withdrawal syndrome and haemorrhagic disease, not related to vitamin K deficiency).
  The administration of folic acid during the first trimester may reduce the risk of neural tube defects.
– *Breast-feeding: no contra-indication*

Remarks

– Take with meals.
– Also comes in 100 mg crushable tablets and 200 mg/5 ml oral solution.
– *Storage: below 25°C –* –

ZIDOVUDINE = AZT = ZDV

Prescription under medical supervision

Therapeutic action

– Antiretroviral, HIV-1 and HIV-2 nucleoside reverse transcriptase inhibitor

Indications

– HIV-1 or HIV-2 infection, in combination with other antiretroviral drugs

Presentation

– 300 mg tablet
– 50 mg/5 ml oral solution

Dosage

– Premature infant: 3 mg/kg/day in 2 divided doses for the first 2 weeks after birth then 8 mg/kg/day in 2 divided doses
– Child under 4 weeks: 8 mg/kg/day in 2 divided doses
– Child from 4 weeks to 13 years: 360 to 480 mg/m^2/day in 2 divided doses
– Adult: 600 mg/day in 2 divided doses

Weight	10 mg/ml oral solution	300 mg tablet
5 to 6 kg	6 ml x 2	–
7 to 9 kg	8 ml x 2	–
10 to 14 kg	12 ml x 2	–
15 to 19 kg	17 ml x 2	–
20 to 24 kg	20 ml x 2	–
25 to 29 kg	25 ml x 2	1 tab x 2
30 to 39 kg	28 ml x 2	1 tab x 2
≥ 40 kg	–	1 tab x 2

Duration

– The duration of treatment depends on the efficacy and tolerance of zidovudine.

Contra-indications, adverse effects, precautions

– Do not administer to patients with severe haematological disorders (leukopenia, anaemia), to neonates with hyperbilirubinaemia or raised transaminases.
– May cause: haematological disorders (monitor CBC), gastrointestinal disturbances (nausea, diarrhoea, etc.), headache, myopathy, hepatic disorders, lactic acidosis. Stop taking zidovudine in the event of severe haematological disorders or hepatic disorders (hepatomegaly, raised transaminases).
– Reduce dosage in patients with severe renal or hepatic impairment.
– *Pregnancy: no contra-indication*

Remarks

– For prophylactic treatment to reduce mother-to-child transmission, check national recommendations.
– Many fixed-dose combinations containing zidovudine are available.
– *Storage: below 25°C –*

ZIDOVUDINE/LAMIVUDINE = AZT/3TC

Prescription under medical supervision

Therapeutic action

– Combination of 2 antiretrovirals, HIV-1 and HIV-2 nucleoside reverse transcriptase inhibitors

Indications

– HIV-1 or HIV-2 infection, in combination with another antiretroviral drug

Presentation

– 60 mg AZT/30 mg 3TC tablet and dispersible tablet
– 300 mg AZT/150 mg tablet

Dosage

– Child less than 25 kg: see table below

Weight	60 mg AZT/30 mg 3TC tablet
3 to 5 kg	1 tab x 2
6 to 9 kg	1½ tab x 2
10 to 13 kg	2 tab x 2
14 to 19 kg	2½ tab x 2
20 to 24 kg	3 tab x 2

– Child ≥ 25 kg and adult: one 300 mg AZT/150 mg 3TC tablet twice daily

Duration

– Depending on the efficacy and tolerance of treatment.

Contra-indications, adverse effects, precautions

– Do not administer to patients with severe haematological disorders (neutropenia, anaemia).
– May cause:
  • adverse effects common to all 2 antiretrovirals: gastrointestinal disturbances;
  • adverse effects of zidovudine: see zidovudine;
  • adverse effects of lamivudine: see lamivudine.
– *Pregnancy: no contra-indication*

Remarks

– *Storage: below 25°C*

ZIDOVUDINE/LAMIVUDINE/NEVIRAPINE = AZT/3TC/NVP

Prescription under medical supervision

Therapeutic action

– Combination of 3 antiretrovirals

Indications

– HIV-1 infection

Presentation

– 60 mg AZT/30 mg 3TC/50 mg NVP tablet
– 300 mg AZT/150 mg 3TC/200 mg NVP tablet

Dosage

– Child less than 25 kg: see table below

Weight	60 mg AZT/30 mg 3TC/50 mg NVP tablet
3 to 5 kg	1 tab x 2
6 to 9 kg	1½ tab x 2
10 to 13 kg	2 tab x 2
14 to 19 kg	2½ tab x 2
20 to 24 kg	3 tab x 2

– Child ≥ 25 kg and adult: one 300 mg AZT/150 mg 3TC/200 mg NVP tablet twice daily

Duration

– Depending on the efficacy and tolerance of treatment.

Contra-indications, adverse effects, precautions

– Do not administer to patients with severe haematological disorders (neutropenia, anaemia), hepatic disorders or intolerance to nevirapine that led to discontinuation of treatment.
– May cause:
  • adverse effects common to all 3 antiretrovirals: gastrointestinal disturbances;
  • adverse effects of zidovudine: see zidovudine;
  • adverse effects of lamivudine: see lamivudine;
  • adverse effects of nevirapine: see nevirapine.
– Monitor if possible liver enzyme level (ALAT) during the first 2 months, then every 6 months. If the enzyme level reaches 5 times the normal level, stop nevirapine immediately.
– Nevirapine reduces the efficacy of oral contraceptives: use a non-hormonal contraception or injectable medroxyprogesterone or an oral contraceptive containing 50 µg ethinylestradiol per tablet.
– Do not combine with rifampicin.
– <u>*Pregnancy*</u>*: no contra-indication*

Remarks

– To improve tolerance of NVP, administer half doses for the first 14 days of treatment. Therefore, start triple therapy by using AZT/3TC co-formulations and nevirapine tablets. After the initial 14-day phase of treatment, use the co-formulation AZT/3TC/NVP.
– <u>*Storage*</u>*: below 25°C*

ZINC SULFATE

Therapeutic action
– Micronutrient

Indications
– Zinc supplementation in combination with oral rehydration therapy in the event of acute and/or persistent diarrhoea in children under 5 years

Presentation
– 20 mg scored and dispersible tablet, packed in a blister
– 20 mg/5 ml syrup

Dosage and duration
– Child under 6 months: 10 mg once daily (½ tablet or ½ teaspoon once daily) for 10 days
– Child from 6 months to 5 years: 20 mg once daily (1 tablet or 1 teaspoon once daily) for 10 days

Place the half-tablet or full tablet in a teaspoon, add a bit of water to dissolve it, and give the entire spoonful to the child.

Contra-indications, adverse effects, precautions
– No contra-indication.
– If the child vomits within 30 minutes after swallowing the tablet, re-administer the dose.
– Do not give simultaneously with ferrous salts, administer at least 2 hours apart.

Remarks
– Zinc sulfate is given in combination with oral rehydration solution in order to reduce the duration and severity of diarrhoea, as well as to prevent further occurrences in the 2 to 3 months after treatment. Zinc sulfate must never replace oral rehydration therapy which is essential (nor can it replace antibiotic therapy that may, in specific cases, be necessary).
– Zinc supplementation is not recommended in the event of diarrhoea in malnourished children taking therapeutic food (BP100®, Plumpy' nut®, milk F75® or F100®, etc.) as these foods already contain the required amount of zinc.
– *Storage: below 25°C –* –
Tablets are packed in a blister. Leave tablets in blister until use. Once a tablet is removed from the blister, it must be dissolved and administered immediately.

Injectable drugs

Acetaminophen
Adrenaline
Albuterol
Amoxicillin/Clavulanic acid
Amphotericin B conventional
Amphotericin B liposomal
Ampicillin
Artemether
Artesunate
Atropine
Benzathine benzylpenicillin
Benzylpenicillin
Benzylpenicillin procaine
Benzylpenicillin procaine/Benzylpenicillin
Butylscopolamine
Calcium gluconate
Ceftriaxone
Chloramphenicol
Chloramphenicol, long-acting oily
Chlorpromazine
Clindamycin
Cloxacillin
Co-amoxiclav
Dexamethasone
Dextrose 50%
Diazepam emulsion
Diazepam solution
Diclofenac
Digoxin
Dipyrone
Eflornithine
Epinephrine = EPN
Etonogestrel subdermal implant
Fluconazole
Furosemide
Fortified penicillin procaine
Gentamicin
Glucose 50%
Haloperidol
Heparin
Hydralazine
Hydrocortisone
Hyoscine butylbromide
Insulin
Insulin, intermediate-acting
Insulin, long-acting
Insulin, short-acting
Ketamine
Labetalol
Levonorgestrel subdermal implant
Lidocaine = Lignocaine
Magnesium sulfate = MgSO4
Medroxyprogesterone
Melarsoprol
Metamizole
Methylergometrine
Metoclopramide
Metronidazole
Morphine
Naloxone
Noramidopyrine
Omeprazole
Ondansetron
Oxytocin
Paracetamol
Penicillin G
Penicillin G procaine
Pentamidine
Phenobarbital
Phytomenadione
Potassium chloride 10%
Promethazine
Protamine
Quinine
Salbutamol
Sodium bicarbonate 8.4%
Spectinomycin
Streptomycin = S
Suramin
Thiamine
Tramadol
Vitamin B1
Vitamin K1

AMOXICILLIN/CLAVULANIC ACID = CO-AMOXICLAV

Prescription under medical supervision

Therapeutic action

– Penicillin antibacterial, combined with a beta-lactamase inhibitor. The addition of clavulanic acid to amoxicillin extends its spectrum of activity to cover beta-lactamase producing Gram-positive and Gram-negative organisms, including some Gram-negative anaerobes.

Indications

– Erysipelas and cellulitis
– Necrotizing infections of the skin and soft tissues (necrotizing fasciitis, gas gangrene, etc.), in combination with clindamycin and gentamicin
– Severe postpartum upper genital tract infection, in combination with gentamicin

Presentation and route of administration

– Powder for injection, in vial containing 1 g amoxicillin/100 mg clavulanic acid, to be dissolved in 20 ml water for injection or 0.9% sodium chloride, for slow IV injection (3 minutes) or IV infusion (30 minutes). DO NOT DILUTE IN GLUCOSE.

Dosage (expressed in amoxicillin)

– *Erysipelas, cellulitis*
Child under 3 months: 60 mg/kg/day divided in 2 infusions
Child 3 months and over: 80 to 100 mg/kg/day divided in 3 injections or infusions (max. 3 g/day)
Adult: 3 g/day divided in 3 injections or infusions

– *Necrotizing infections*
Child under 3 months: 100 mg/kg/day divided in 2 infusions
Child 3 months and over and < 40 kg: 150 mg/kg/day divided in 3 infusions (max. 6 g/day)
Child 40 kg and over and adult: 6 g/day divided in 3 infusions

– *Upper genital tract infection*
Adult: 3 g/day divided in 3 injections or infusions

For administration by IV infusion, dilute each dose of amoxicillin/clavulanic acid in 5 ml/kg of 0.9% sodium chloride in children less than 20 kg and in a bag of 100 ml of 0.9% sodium chloride in children over 20 kg and in adults.

Duration

– *Erysipelas, cellulitis*: 7 to 10 days; *necrotizing infections*: 10 to 14 days; *upper genital tract infection*: depending on clinical response. Change to oral treatment as soon as possible.

Contra-indications, adverse effects, precautions

– Do not administer to penicillin-allergic patients, patients with history of hepatic disorders during a previous treatment with co-amoxiclav, patients with infectious mononucleosis.
– Administer with caution to patients allergic to cephalosporins (cross-sensitivity may occur), patients with hepatic impairment or severe renal impairment (reduce dosage and give every 12 to 24 hours).
– May cause: diarrhoea; hepatic disorders (avoid treatments > 14 days); allergic reactions sometimes severe.
– Do not combine with methotrexate (increased methotrexate toxicity).
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Do not mix with other drugs in the same syringe or infusion bag.
– *Storage: below 25°C*
Once reconstituted, the solution must be used immediately; discard any unused open vial.

AMPHOTERICIN B conventional 

Prescription under medical supervision

Therapeutic action

– Antifungal

Indications

– Cryptococcal meningitis in combination with flucytosine or fluconazole
– Severe histoplasmosis or penicilliosis

Presentation and route of administration

– Powder for injection, in 50 mg vial, to be dissolved in 10 ml of water for injection, to obtain a concentrated solution containing 5 mg/ml. The concentrated solution must be diluted in 500 ml of 5% glucose to obtain a solution containing 0.1 mg/ml, for slow IV infusion.

Dosage and duration

– Child and adult: 0.7 to 1 mg/kg/day over 4 to 6 hours depending on tolerance, for 2 weeks (cryptococcosis, penicilliosis) or 1 to 2 weeks (histoplasmosis)

Contra-indications, adverse effects, precautions

– Administer with caution to patients with renal impairment.
– May cause:
  • intolerance reactions during administration: fever, chills, headache, nausea, vomiting, hypotension; local reaction: pain and thrombophlebitis at injection site; allergic reactions;
  • muscle or joint pain, cardiovascular disorders (arrhythmias, heart failure, hypertension, cardiac arrest), neurologic (seizures, blurred vision, dizziness), haematological or hepatic disorders;
  • disturbances in renal function (reduced glomerular filtration, hypokalaemia, hypomagnesiemia).
– Avoid combination with: drugs causing hypokalaemia (furosemide, corticosteroids), nephrotoxic drugs (amikacin, ciclosporine); digoxin, zidovudine, tenofovir.
– To prevent renal toxicity, administer routinely 500 ml to 1 litre of 0.9% sodium chloride or Ringer lactate prior to each amphotericin B infusion.
– In adults, as soon as the patient can swallow, give supplements of potassium (4 tab of 8 mmol/day in 2 divided doses) and magnesium (1 g/day in 2 divided doses) until the end of amphotericin treatment.
– In the event of intolerance, stop infusion, give paracetamol or an antihistamine then, resume administration reducing infusion rate by half.
– Monitor serum creatinine levels, and if possible, serum potassium levels (once to twice weekly) throughout treatment.
– If serum creatinine levels rise by over 50%, increase preventive hydration (1 litre every 8 hours) or stop treatment. Then, after improvement, resume amphotericin at the lowest effective dose or on alternate days.
– Use liposomal amphotericin B if serum creatinine levels increase again or if clearance is < 30 ml/minute or in patients with pre-existing severe renal failure.
– *Pregnancy: check for renal dysfunction in the newborn if administered during the last month of pregnancy.*
– *Breast-feeding: avoid, except if vital*

Remarks

– Only use 5% glucose for administration (incompatible with other infusion fluids). Do not use the preparation if there is visible precipitation (the glucose solution is too acid).
– Do not add other drugs in the infusion bottle or bag.
– Protect infusion bottle from light during administration (wrap in dark paper).
– For cryptococcosis, fluconazole alone at high dose may be an alternative when amphotericin B (conventional or liposomal formulation) cannot be used.
– *Storage:*
  • *Vial of powder: must be kept refrigerated (between 2°C and 8°C); in the absence of a refrigerator, 7 days maximum, below 25°C.*
  • *Concentrated solution (5 mg/1 ml): may be kept refrigerated 24 hours (between 2°C and 8°C).*
  • *Solution for infusion (0.1 mg/ml): must be used immediately.*

AMPHOTERICIN B liposomal



Prescription under medical supervision

Therapeutic action

– Antifungal

Indications

– Cryptococcal meningitis, when conventional amphotericin B is contra-indicated (severe pre-existing renal impairment or amphotericin B induced renal impairment)
– Cutaneomucous or visceral leishmaniasis
– Severe histoplasmosis

Presentation, preparation and route of administration

– Powder for injection, in 50 mg vial, to be dissolved in 12 ml of water for injection, to obtain a concentrated suspension containing 4 mg/ml
– With a syringe, withdraw the required dose of concentrated suspension. Attach the filter provided with the vial to the syringe; inject the contents of the syringe, through the filter, into the volume of 5% glucose (50 ml, 250 ml, 500 ml) needed to obtain a solution containing between 0.2 to 2 mg/ml, for IV perfusion.

Dosage and duration

– *Cryptococcal meningitis, severe histoplasmosis*
Child over 1 month and adult: 3 mg/kg once daily over 30 to 60 minutes for 2 weeks

Weight	Liposomal amphotericin B, 50 mg-vial in 12 ml			G5%
	Daily dose in mg/kg	Nb of vials	Volume of suspension (4 mg/ml) to be withdrawn	Volume required for administration
4 kg	12	1	3 ml	50 ml
5 kg	15		4 ml	
6 kg	18		4,5 ml	
7 kg	21		5 ml	
8 kg	24		6 ml	
9 kg	27		7 ml	
10 kg	30		7,5 ml	
15 kg	45		11 ml	
20 kg	60	2	15 ml	250 ml
25 kg	75		19 ml	
30 kg	90		23 ml	
35 kg	105	3	26 ml	500 ml
40 kg	120		30 ml	
45 kg	135		34 ml	
50 kg	150		38 ml	
55 kg	165	4	41 ml	
60 kg	180		45 ml	
65 kg	195		50 ml	
70 kg	210	5	53 ml	

– *Cutaneomucous or visceral leishmaniasis*
Follow the recommended protocol, which varies from one region to another (exact dose, administration schedule, etc.). For information, the total dose in children over 1 month and adults is 15 to 30 mg/kg.

Contra-indications, adverse effects, precautions

– May cause:
  • intolerance reactions during administration: fever, chills, headache, nausea, vomiting, hypotension; local reaction: pain and thrombophlebitis at injection site; allergic reactions;
  • gastrointestinal disturbances, disturbances in renal function (raised creatinine or urea levels, renal impairment), hypokalaemia, hypomagnesiemia, elevated liver enzymes; rarely, haematological disorders (thrombocytopenia, anaemia).
– Avoid combination with: drugs causing hypokalaemia (furosemide, corticosteroids), nephrotoxic drugs (amikacin, ciclosporine); digoxin, zidovudine.
– The infusion may be administered over 2 hours if necessary to prevent or minimize adverse effects.
– Monitor serum creatinine levels, and if possible, serum potassium levels (once to twice weekly) throughout treatment; adapt adjunctive therapy (potassium and magnesium supplementation) according to the results.
– If renal function deteriorates, reduce the dose by half for a few days.
– *Pregnancy: check for renal dysfunction in the newborn if administered during the last month of pregnancy.*
– *Breast-feeding: avoid, except if vital*

Remarks

– Liposomal amphotericin B is better tolerated and less nephrotoxic than conventional amphotericin B.
– Do not add other drugs in the infusion bottle or bag; do not use the preparation if there is visible precipitation.
– Before each infusion, rinse the IV catheter with 5% glucose.
– *Storage:*
  • *Vial of powder: must be kept refrigerated (between 2°C and 8°C) or below 25°C.*
  • *Solutions (reconstituted and for infusion): be kept refrigerated 24 hours (between 2°C and 8°C).*

AMPICILLIN

Prescription under medical supervision

Therapeutic action

– Penicillin antibacterial

Indications

– Severe bacterial infections: meningitis, pneumonia, pyelonephritis, postpartum upper genital tract infection, etc., in combination with other antibacterials

Presentation and route of administration

– Powder for injection in 500 mg and 1 g vials, to be dissolved in 5 ml of water for injection, for IM or slow IV injection (3 to 5 minutes) or IV infusion (30 minutes) in 0.9% sodium chloride or 5% glucose

Dosage

– *Meningitis in young children, in combination with cefotaxime or gentamicin*
  • Neonate:
  0 to 7 days (< 2 kg): 200 mg/kg/day divided in 2 IV injections or infusions
  0 to 7 days (≥ 2 kg): 300 mg/kg/day divided in 3 IV injections or infusions
  8 days to < 1 month: 300 mg/kg/day divided in 3 IV injections or infusions
  • Child 1 to 3 months: 300 mg/kg/day divided in 3 or 4 IV injections or infusions

– *Pneumonia and pyelonephritis, in combination with gentamicin*
  • Neonate:
  0 to 7 days (< 2 kg): 100 mg/kg/day divided in 2 IV injections or infusions
  0 to 7 days (≥ 2 kg): 150 mg/kg/day divided in 3 IV injections or infusions
  8 days to < 1 month: 150 mg/kg/day divided in 3 IV injections or infusions
  • Child 1 month and over: 200 mg/kg/day divided in 3 or 4 injections or infusions
  • Adult: 3 to 4 g/day (8 g/day in pyelonephritis) divided in 3 or 4 injections or infusions

– *Postpartum upper genital tract infection, in combination with metronidazole and gentamicin*
  Adult: 6 g/day divided in 3 or 4 injections or infusions

For administration by IV infusion, dilute each dose of ampicillin in 5 ml/kg of 0.9% sodium chloride or 5% glucose in children less than 20 kg and in a bag of 100 ml of 0.9% sodium chloride or 5% glucose in children over 20 kg and in adults.

Duration

– According to indication and clinical response. Change to oral treatment as soon as possible with amoxicillin or a combination of antibacterials, depending on the indication.

Contra-indications, adverse effects, precautions

– Do not administer to patients with infectious mononucleosis (risk of skin eruption) or to penicillin-allergic patients.
– Administer with caution to patients allergic to cephalosporins (cross-sensitivity may occur) or patients with severe renal impairment (reduce dosage).
– May cause: skin eruption, gastrointestinal disturbances, allergic reactions sometimes severe.
– Do not combine with methotrexate (increased methotrexate toxicity).
– <u>Pregnancy</u>: *no contra-indication*
– <u>Breast-feeding</u>: *no contra-indication*

Remarks

– Do not use the IM route in neonates. IV route should be preferred to IM route in other situations.
– Do not mix with another drug in the same syringe or infusion.
– Injectable amoxicillin is used for the same indications.
– <u>Storage</u>: *below 25°C –*
  Once reconstituted, the solution must be used immediately.

ARTEMETHER

Prescription under medical supervision

Therapeutic action

– Antimalarial

Indications

– Treatment of severe falciparum malaria
– Initial treatment of uncomplicated falciparum malaria, when persistent vomiting precludes oral therapy

Presentation and route of administration

– 80 mg in 1 ml ampoule (80 mg/ml), oily solution for IM injection
– 20 mg in 1 ml ampoule (20 mg/ml), oily solution for IM injection

When the dose required is less than 1 ml, use a 1 ml syringe graduated in 0.01 ml.

Dosage and duration

– Child and adult:
3.2 mg/kg by IM injection on the first day followed by 1.6 mg/kg once daily

Weight	20 mg ampoule		80 mg ampoule	
	Loading dose	Maintenance dose	Loading dose	Maintenance dose
< 3 kg	0.5 ml	0.3 ml	–	–
3-4 kg	0.8 ml	0.4 ml	–	–
5-6 kg	1.2 ml	0.6 ml	–	–
7-9 kg	1.6 ml	0.8 ml	–	–
10-14 kg	2.5 ml	1.2 ml	–	–
15-19 kg	3.2 ml	1.6 ml	–	–
20-29 kg	–	–	1.2 ml	0.6 ml
30-39 kg	–	–	1.6 ml	0.8 ml
40-49 kg	–	–	2 ml	1 ml
50-59 kg	–	–	2.5 ml	1.2 ml

As soon as the patient can swallow, change to oral route with an artemisinin-based combination therapy (do not use the combination artesunate-mefloquine if the patient developed neurological signs during the acute phase).

Contra-indications, adverse effects, precautions

– May cause: headache, gastrointestinal disturbances, dizziness, neutropenia and transient increase in liver transaminases.
– Do not administer by IV route.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– *Storage: below 25°C –*

ARTESUNATE

Prescription under medical supervision

Therapeutic action

– Antimalarial

Indications

– Treatment of severe falciparum malaria
– Initial treatment of uncomplicated falciparum malaria, when persistent vomiting precludes oral therapy

Presentation, preparation and route of administration

– Powder for slow IV injection (3 to 5 minutes) o slow IM injection, in:
  • 30 mg-vial + one 0.5 ml-ampoule of 5% sodium bicarbonate + one 2.5 ml-ampoule of 0.9% sodium chloride
  • 60 mg-vial + one 1 ml-ampoule of 5% sodium bicarbonate + one 5 ml-ampoule of 0.9% sodium chloride
  • 120 mg-vial + one 2 ml-ampoule of 5% sodium bicarbonate + one 10 ml-ampoule of 0.9% sodium chloride
– Dissolve the powder in the entire volume of 5% sodium bicarbonate and shake the vial until the solution becomes clear. Then, add the 0.9% sodium chloride into the vial:

Vial	Volume of sodium chloride 10 mg/ml solution (IV)	Volume of sodium chloride 20 mg/ml solution (IM)
30 mg	2.5 ml	1 ml
60 mg	5 ml	2 ml
120 mg	10 ml	4 ml

Dosage and duration

– Child under 20 kg: 3 mg/kg/dose
– Child 20 kg and over and adult: 2.4 mg/kg/dose
– One dose on admission (H0) then 12 hours after admission (H12) then 24 hours after admission (H24) then, once a day.
  Administer at least 3 doses parenterally, then, if the patient can tolerate the oral route, change to oral route with an artemisinin-based combination (do not use the combination artesunate-mefloquine if the patient developed neurological signs during the acute phase).

Contra-indications, adverse effects, precautions

– May cause: gastrointestinal disturbances, dizziness, headache, fever, muscle and joint pain, pruritus; rarely rash, QT interval prolongation, post-treatment haemolytic anaemia (especially in case of hyperparasitaemia and in young children).
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– The solution should be clear, do not use if the solution is cloudy or if a precipitate is present.
– *Storage: below 25°C –* –
  Once reconstituted, the solution should be used immediately.

Weight	IV injection Artesunate solution 10 mg/ml			IM injection Artesunate solution 20 mg/ml		
	30 mg	60 mg	120 mg	30 mg	60 mg	120 mg
< 3 kg	1 ml	–	–	0.5 ml*	–	–
3 to < 4 kg	1.2 ml	–	–	0.6 ml*	–	–
4 to < 5 kg	1.5 ml	–	–	0.8 ml*	–	–
5 to < 6 kg	2 ml	–	–	1 ml	–	–
6 to < 8 kg	2.5 ml	–	–	1.2 ml	–	–
8 to < 10 kg	3 ml	–	–	1.5 ml	–	–
10 to < 13 kg	–	4 ml	–	–	2 ml	–
13 to < 15 kg	–	4.5 ml	–	–	2.5 ml	–
15 to < 17 kg	–	5 ml	–	–	2.5 ml	–
17 to < 20 kg	–	6 ml	–	–	3 ml	–
20 to < 25 kg	–	6 ml	–	–	3 ml	–
25 to < 29 kg	–	–	7 ml	–	–	3.5 ml
29 to < 33 kg	–	–	8 ml	–	–	4 ml
33 to < 37 kg	–	–	9 ml	–	–	5 ml
37 to < 41 kg	–	–	10 ml	–	–	5 ml
41 to < 45 kg	–	–	11 ml	–	–	6 ml
45 to < 50 kg	–	–	12 ml	–	–	6 ml
50 to < 55 kg**	–	–	13 ml	–	–	7 ml
55 to < 62 kg	–	–	15 ml	–	–	8 ml
62 to < 67 kg	–	–	16 ml	–	–	8 ml
67 to < 71 kg	–	–	17 ml	–	–	9 ml
71 to < 76 kg	–	–	18 ml	–	–	9 ml
76 to 81 kg	–	–	20 ml	–	–	10 ml

* Use a 1 ml syringe graduated in 0.01 ml when the dose required is less than 1 ml.
** For patients over 50 kg, a 2nd vial must be reconstituted and prepared to obtain the volume needed.

ATROPINE



Prescription under medical supervision

Therapeutic action

– Parasympatholytic, antispasmodic

Indications

– Premedication in anaesthesia
– Spasms of the gastrointestinal tract
– Organophosphorus pesticide poisoning

Presentation and route of administration

– 1 mg atropine sulfate in 1 ml ampoule (1 mg/ml) for SC, IM, IV injection

Also comes in 0.25 mg/ml and 0.5 mg/ml ampoules.

Dosage

– *Premedication in anaesthesia*
  Child: 0.01 to 0.02 mg/kg by SC or IV injection
  Adult: 1 mg by SC or IV injection
– *Spasms of the gastrointestinal tract*
  Child from 2 to 6 years: 0.25 mg by SC injection as a single dose
  Child over 6 years: 0.5 mg by SC injection as a single dose
  Adult: 0.25 to 1 mg by SC injection, to be repeated every 6 hours if necessary, without exceeding 2 mg/day.
– *Organophosphorus pesticide poisoning*
  Child: 0.02 to 0.05 mg/kg by IM or slow IV injection
  Adult: 2 mg by IM or slow IV injection
  Repeat every 5 to 10 minutes until signs of atropinisation appear (reduced secretions, tachycardia, dilatation of the pupils).

Contra-indications, adverse effects, precautions

– Do not administer to patients with urethro-prostatic disorders, cardiac disorders, glaucoma.
– Do not administer to children with high fever.
– May cause: urinary retention, dryness of the mouth, constipation, dizziness, headache, dilatation of the pupils, tachycardia.
– Administer with caution and under close supervision to patients taking other anticholinergic drugs (antidepressants, neuroleptics, H-1 antihistamines, antiparkinsonians, etc.).
– *Pregnancy: no contra-indication; NO PROLONGED TREATMENT*
– *Breast-feeding: avoid; NO PROLONGED TREATMENT*

Remarks

– Atropine IV is also used to prevent bradycardic effects of neostigmine when used to reverse the effects of competitive muscle relaxants: 0.02 mg/kg in children; 1 mg in adults.
– Do not mix with other drugs in the same syringe.
– *Storage: below 25°C –* ☼̸

BENZATHINE BENZYLPENICILLIN

Prescription under medical supervision

2

Therapeutic action

– Penicillin antibacterial with prolonged action (15 to 20 days)

Indications

– Treatment of syphilis (except neurosyphilis)
– Treatment of non-venereal treponematoses: bejel, yaws, pinta
– Treatment of streptococcal tonsillitis
– Prophylaxis of rheumatic fever
– Treatment of diphtheria, prophylaxis of diphtheria in the event of direct contact

Presentation and route of administration

– Powder for injection, 2.4 M IU (= 1.44 g) vial, to be dissolved in 8 ml water for injection, for IM injection. NEVER FOR IV INJECTION NOR INFUSION. Shake suspension before administration.

Also comes in 1.2 M IU (= 0.72 g) vial to be dissolved in 4 ml and 0.6 M IU (= 0.36 g) vial to be dissolved in 2 ml.

Dosage and duration

– *Treatment of syphilis*
  Adult: 2.4 MIU/injection. For *early syphilis*: single dose; for *late syphilis* or *syphilis of unknown duration*: one injection per week for 3 weeks.
  Divide the dose into 2 injections (half-dose in each buttock).
– *Bejel, yaws, pinta, streptococcal tonsillitis, prophylaxis and treatment of diphtheria*
  Child under 30 kg: 600 000 IU as a single dose
  Child over 30 kg and adult: 1.2 MIU as a single dose
– *Prophylaxis of rheumatic fever*
  Child under 30 kg: 600 000 IU
  Child over 30 kg and adult: 1.2 MIU
  For primary prophylaxis: administer a single dose; for secondary prophylaxis: one injection every 3 to 4 weeks.

Contra-indications, adverse effects, precautions

– Do not administer to penicillin-allergic patients.
– Administer with caution to patients allergic to cephalosporins (cross-sensitivity may occur).
– May cause:
  • gastrointestinal disturbances; allergic reactions, sometimes severe. In the event of allergic reactions, stop treatment immediately;
  • Jarisch-Herxheimer reaction in patients with syphilis.
– Ensure that the IM injection does not enter a blood vessel: IV administration may result in cardiorespiratory arrest.
– Do not combine with methotrexate.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Benzathine benzylpenicillin (or penicillin G benzathine) is a penicillin with a long duration of action (15 to 20 days), this must not be confused with benzylpenicillin (or penicillin G) that has a short duration of action (6 hours).
– Benzathine benzylpenicillin should not be used for prevention, except in case of rheumatic fever or diphtheria.
– Do not mix with other drugs in the same syringe.
– *Storage: below 25°C –*
  Once reconstituted, suspension must be kept refrigerated (2°C to 8°C) and may be used for up to 24 hours.

BENZYLPENICILLIN = PENICILLIN G

Prescription under medical supervision

This presentation is rarely used as it requires injections every 4 to 6 hours, which can only be done in a hospital setting.

Therapeutic action

– Penicillin antibacterial with rapid action and elimination (6 hours)

Indications

– Severe infections: pneumonia, neurosyphilis, meningitis, necrotising fasciitis, gas gangrene, septicaemia, endocarditis, etc., alone or in combination with other antibacterials, depending on indication

Presentation and route of administration

– Powder for injection in 1 MIU (600 mg) and 5 MIU (3 g) vials, for IM or IV injection (via the infusion tube) or infusion

Dosage

– *Severe pneumonia*
  Child over 2 months: 200 000 to 400 000 IU (120 to 240 mg)/kg/day in 4 injections
  Adult: 8 to 12 MIU (4.8 to 7.2 g)/day in 4 injections
– *Neurosyphilis*
  Adult: 12 to 24 MIU (7.2 to 14.4 g)/day in 6 injections
– *Meningitis, streptococcal necrotising fasciitis, gas gangrene*
  Child: 600 000 IU (360 mg)/kg/day in 6 injections
  Adult: 24 MIU (14.4 g)/day in 6 injections

Duration

– *Pneumonia*: 5 days minimum; *neurosyphilis and meningococcal or pneumococcal meningitis*: 14 days; *fasciitis and gas gangrene*: 7 days minimum

Contra-indications, adverse effects, precautions

– Do not administer to penicillin-allergic patients.
– Administer with caution to patients allergic to cephalosporins (cross-sensitivity may occur).
– May cause:
  • gastrointestinal disturbances, allergic reactions sometimes severe. In the event of allergic reactions, stop treatment immediately;
  • Jarisch-Herxheimer reaction in patients with syphilis (to be prevented with oral prednisolone: 3 doses of 20 mg administered at 12 hour-intervals);
  • neurotoxicity in patients with renal impairment or when large doses are injected too rapidly by IV route.
– Reduce dosage in patients with severe renal impairment: maximum 10 MIU/day (6 g/day) in adults.
– Do not combine with methotrexate.
– <u>Pregnancy</u>: *no contra-indication*
– <u>Breast-feeding</u>: *no contra-indication*

Remarks

– Do not confuse rapidly acting benzylpenicillin, which can be used by IV route, with long-acting penicillins (procaine benzylpenicillin and benzathine benzylpenicillin), which must never be used for IV injection or infusion.
– Do not mix with other drugs in the same syringe or infusion.
– *<u>Storage</u>: below 25°C –*
  Once reconstituted, suspension must be used immediately.

BENZYLPENICILLIN PROCAINE = PENICILLIN G PROCAINE

Prescription under medical supervision

2

Therapeutic action

– Penicillin antibacterial with prolonged effect (12 to 24 hours)

Indications

– Diphtheria, pneumonia, erysipelas and cellulitis
– Neurosyphilis, in combination with probenecid

Presentation and route of administration

– Powder for injection in 1 MIU (1 g) and 3 MIU (3 g) vials, to be dissolved in water for injection, for IM injection. NEVER FOR IV INJECTION OR INFUSION.

Dosage

– Child: 50 000 IU/kg (50 mg/kg) once daily, without exceeding 1.5 MIU
– Adult: 1 to 1.5 MIU once daily (for neurosyphilis, 2.4 MIU once daily)

Age	Weight	1 MUI vial	3 MUI vial
< 1 year	< 8 kg	¼ to ½ vial	–
1 to 5 years	8 to 15 kg	⅔ vial	–
5 to 10 years	15 to 25 kg	1 vial	⅓ vial
10 to 15 years	25 to 35 kg	1 vial	½ vial
Adult	> 35 kg	1 vial	½ vial

Duration

– *Diphtheria*: 7 days; *pneumonia, erysipelas, cellulitis*: 7 to 10 days; *neurosyphilis*: 10 to 14 days

Contra-indications, adverse effects, precautions

– Do not administer to patients allergic to penicillin and/or procaine.
– Administer with caution to patients allergic to cephalosporins (cross-sensitivity may occur).
– Administer with caution to children under one year: risk of seizures and allergy due to procaine.
– May cause:
  • pain at the injection site, gastrointestinal disturbances, allergic reactions sometimes severe. In the event of allergic reactions, stop treatment immediately;
  • Jarisch-Herxheimer reaction in patients with syphilis (to be prevented with oral prednisolone: 3 doses of 20 mg administered at 12 hour-intervals).
– Reduce dosage in patients with severe renal impairment.
– Do not combine with methotrexate.
– Ensure that the IM injection does not enter a blood vessel: IV administration may result in ischemia at the injection site, psychiatric and neurological disorders (agitation, hallucinations, seizures).
– Pregnancy: *no contra-indication*
– Breast-feeding: *no contra-indication*

Remarks

– For the treatment of neurosyphilis, benzylpenicillin procaine is combined with oral probenecid (2 g/day in 4 divided doses at 6-hour intervals) for the entire length of treatment.
– Benzylpenicillin procaine is replaced in some countries by a combination of benzylpenicillin procaine (3 MIU) + benzylpenicillin (1 MIU), often called fortified penicillin procaine (PPF) which has the advantage of the immediate action of benzylpenicillin, followed by the delayed action of benzylpenicillin procaine.
– Do not mix with other drugs in the same syringe.
– *Storage: below 25°C –*
  Once reconstituted, suspension must be used immediately.

BENZYLPENICILLIN PROCAINE/BENZYLPENICILLIN = FORTIFIED PENICILLIN PROCAINE

Prescription under medical supervision

Therapeutic action

– Penicillin antibacterial with both prolonged effect due to procaine benzylpenicillin (12 to 24 hours) and immediate effect due to benzylpenicillin

Indications

– Diphtheria, pneumonia, erysipelas and cellulitis

Presentation and route of administration

– Powder for injection in 3 MIU benzylpenicillin procaine + 1 MIU benzylpenicillin vial, to be dissolved in 8 ml water for injection, for IM injection. NEVER FOR IV INJECTION OR INFUSION.

Dosage

– Child: 50 000 IU/kg (50 mg/kg) once daily, without exceeding 1.5 MIU
– Adult: 1 to 1.5 MIU once daily

Age	Weight	3 MUI + 1 MUI vial (to be dissolved in 8 ml)
< 1 year	< 8 kg	0.75 ml
1 to 5 years	8 to 15 kg	1.5 ml
5 to 10 years	15 to 25 kg	2.5 ml
10 to 15 years	25 to 35 kg	3 ml
Adult	> 35 kg	3 ml

Duration

– *Diphtheria*: 7 days; *pneumonia*: 5 days minimum; *erysipelas, cellulitis*: 7 to 10 days

Contra-indications, adverse effects, precautions

– Do not administer to patients allergic to penicillin and/or procaine.
– Administer with caution to patients allergic to cephalosporins (cross-sensitivity may occur).
– Administer with caution to children under one year: risk of seizures and allergy due to procaine.
– May cause: pain at the injection site, gastrointestinal disturbances, allergic reactions sometimes severe. In the event of allergic reactions, stop treatment immediately.
– Reduce dosage in patients with severe renal impairment.
– Do not combine with methotrexate.
– Ensure that the IM injection does not enter a blood vessel: IV administration may result in ischemia at the injection site, psychiatric and neurological disorders (agitation, hallucinations, seizures).
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Do not mix with other drugs in the same syringe.
– *Storage: below 25°C –*
Once reconstituted, suspension must be used immediately.

CALCIUM GLUCONATE

Prescription under medical supervision

Therapeutic action

– Calcium therapy
– Antidote to magnesium sulfate

Indications

– Severe hypocalcaemia (hypocalcaemic tetany, neonatal hypocalcaemia, etc.)
– Symptomatic hypermagnesaemia due to excessive doses of magnesium sulfate

Presentation and route of administration

– 1 g ampoule (100 mg/ml, 10 ml; 10% solution) for slow IV injection or infusion in 5% glucose or 0.9% sodium chloride or Ringer lactate

Also comes in 5 g ampoule (100 mg/ml, 50 ml), 10 g vial (100 mg/ml, 100 ml), 20 g vial (100 mg/ml, 200 ml).

Dosage

– *Severe hypocalcaemia*
Neonate: 2 ml/kg of a 10% solution by IV infusion over 30 minutes followed by 4 ml/kg of a 10% solution administered by continuous infusion over 24 hours
Adult: 10 ml by slow IV injection (over at least 5 minutes), either repeated as required, or followed by continuous infusion of 40 ml of a 10% solution over 24 hours
Change to oral route as soon as possible.

– *Magnesium sulfate intoxication*
Adult: 10 ml of a 10% solution by slow IV injection (over at least 5 minutes), to be repeated once if necessary

Duration

– According to clinical response and plasma-calcium levels

Contra-indications, adverse effects, precautions

– Do not administer to patients with severe renal disease or patients receiving cardiac glycosides.
– Do not administer by IM or SC route (pain and risk of tissue necrosis or abscess formation at injection site, especially in infants and children).
– May cause:
  • tingling sensations, warm flushes, dizziness;
  • tissue necrosis in the event of extravasation;
  • hypercalcaemia in the event of too rapid IV injection or overtreatment. First signs of hypercalcaemia include nausea, vomiting, thirst and polyuria. In severe cases, hypotension, bradycardia, arrhythmia, syncope and cardiac arrest may develop.
– Hypercalcaemia can be confirmed by monitoring of serum-calcium levels and ECG changes. Do not use in prolonged treatment if plasma-calcium levels cannot be monitored.
– The patient should be placed in the horizontal position prior to injection and should remain lying down for 30 to 60 minutes.
– Pregnancy: *no contra-indication*
– Breast-feeding: *no contra-indication*

Remarks

– Calcium gluconate is also administered as adjunctive therapy in insect bites or stings (black widow spider, scorpions) for the management of muscle pain and spasms. Several doses at 4-h intervals may be necessary.
– 1 g of calcium gluconate (2.2 mmol or 4.5 mEq) is equivalent to 89 mg of calcium.
– Calcium gluconate is incompatible with many drugs: do not mix with other drugs in the same syringe or infusion fluid.
– Do not use if a precipitate is present.
– Storage: *below 25°C –*

CEFTRIAXONE

Prescription under medical supervision

Therapeutic action

– Third-generation cephalosporin antibacterial

Indications

– Severe bacterial infections: meningitis, pneumonia, typhoid fever, leptospirosis, pyelonephritis, neurosyphilis, etc.
– Cervicitis, urethritis and conjunctivitis due to *Neisseria gonorrhoeae* (in combination with a treatment for chlamydia, except in neonates), chancroid

Presentation and route of administration

– Powder for injection in 250 mg or 1 g vial, to be dissolved:
  • with the solvent containing lidocaine for IM injection only. DO NOT ADMINISTER BY IV INJECTION OR INFUSION the solution reconstituted with this solvent.
  • with water for injection for slow IV injection (3 minutes) or infusion (30 minutes) in 0,9% sodium chloride or 5% glucose

Dosage and duration

– *Severe bacterial infections*
  Child 1 month and over: 50 to 100 mg/kg once daily (max. 2 g/day)
  Adult: 1 to 2 g once daily (up to 4 g daily for typhoid fever)
  Duration varies according to indication and clinical response.
– *Gonococcal cervicitis and urethritis, chancroid*
  Child under 45 kg: 125 mg IM as a single dose
  Child 45 kg and over and adult: 250 mg IM as a single dose
– *Gonococcal conjunctivitis*
  Neonate: 50 mg/kg IM as a single dose (max. 125 mg)
  Adult: 1 g IM as a single dose

For administration by IV route, ceftriaxone powder is to be reconstituted in water for injection only. For administration by IV infusion, dilute each dose of ceftriaxone in 5 ml/kg of 0.9% sodium chloride or 5% glucose in children less than 20 kg and in a bag of 100 ml of 0.9% sodium chloride or 5% glucose in children over 20 kg and in adults.

Contra-indications, adverse effects, precautions

– Do not administer to patients with allergy to cephalosporins or penicillins (cross-sensitivity may occur) and to neonates with jaundice (risk of bilirubin encephalopathy).
– Administer with caution in patients with hepatic or renal impairment. Reduce dosage in patients with severe renal impairment (max. 50 mg/kg/day or 2 g/day in IV).
– May cause: gastrointestinal disturbances, hepatic dysfunction, blood disorders (anaemia, leucopenia, thrombocytopenia), renal dysfunction; allergic reactions sometimes severe (Stevens-Johnson syndrome).
– Do not mix ceftriaxone with calcium-containing solutions such as Ringer lactate (risk of particulate formation).
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Doses greater than 1 g IM should be administered in 2 equally divided injections (one in each buttock). Doses greater than 2 g should be administered by IV infusion only.
– Do not mix with another drug in the same syringe or infusion.
– *Storage: below 25°C –*
  Once reconstituted, the solution must be used immediately.

CHLORAMPHENICOL



Prescription under medical supervision

The use of chloramphenicol should be restricted to severe infections when other less toxic antibacterials are not effective or contra-indicated.

Therapeutic action

– Phenicol antibacterial

Indications

– First-line treatment of plague meningitis
– Alternative to first-line treatments of septicaemic plague
– Alternative to first-line treatments of typhoid fever, when oral administration is not possible

Presentation and route of administration

– 1 g powder for injection, to be dissolved in 10 ml of water for injection, for IV injection over 1 to 2 minutes

Dosage

– Child from 1 year to less than 13 years: 50 to 100 mg/kg/day in 3 divided injections
– Child ≥ 13 years and adult: 3 g/day in 3 divided injections

Age	Weight	**1 g vial** (to be dissolved in 10 ml)	Age	Weight	**1 g vial** (to be dissolved in 10 ml)
1 to < 2 years	10 to < 13 kg	3 ml x 3	8 to < 9 years	25 to < 30 kg	7 ml x 3
2 to < 3 years	13 to < 15 kg	3.5 ml x 3	9 to < 11 years	30 to < 35 kg	8 ml x 3
3 to < 6 years	15 to < 20 kg	5 ml x 3	11 to < 13 years	35 to < 45 kg	9 ml x 3
6 to < 8 years	20 to < 25 kg	6 ml x 3	≥ 13 years and adult	≥ 45 kg	10 ml x 3

Duration

– *Plague*: 10 days; *typhoid fever*: 10 to 14 days. Change to oral route as soon as possible.

Contra-indications, adverse effects, precautions

– Do not administer to children under 1 year.
– Do not administer to patients with:
  • history of allergic reaction or bone marrow depression during a previous treatment with chloramphenicol;
  • G6PD deficiency.
– May cause:
  • dose-related haematological toxicity (bone marrow depression, anaemia, leucopenia, thrombocytopenia), allergic reactions. In these events, stop treatment immediately;
  • gastrointestinal disturbances, peripheral and optic neuropathies.
– Reduce dosage in patients with hepatic or renal impairment.
– Avoid or monitor combination with potentially haematotoxic drugs (carbamazepine, cotrimoxazole, flucytocine, pyrimethamine, zidovudine, etc.).
– *Pregnancy*: ***CONTRA-INDICATED****, except if vital, if there is no therapeutic alternative. If used during the 3rd trimester, risk of grey syndrome in the newborn infant (vomiting, hypothermia, blue-grey skin colour and cardiovascular depression).*
– *Breast-feeding*: ***CONTRA-INDICATED***

Remarks

– Oral treatment is more effective than parenteral treatment: blood and tissue concentrations are higher when chloramphenicol is given orally.
– *Storage: below 25°C –*

Long-acting oily CHLORAMPHENICOL



Prescription under medical supervision

Therapeutic action

– Phenicol antibacterial, with prolonged effect

Indications

– Treatment of meningococcal meningitis during epidemics

Presentation and route of administration

– 500 mg oily suspension in 2 ml ampoule (250 mg/ml) for IM injection only. NEVER FOR IV INJECTION.

Dosage

– Child over 2 years and adult: 100 mg/kg as a single dose (max. 3 g/dose)

Age	Weight	Dose	Volume
2 to < 6 years	13 to < 21 kg	1.5 g	6 ml
6 to < 10 years	21 to < 31 kg	2 g	8 ml
10 to < 15 years	31 to < 54 kg	2.5 g	10 ml
≥ 15 years and adult	≥ 54 kg	3 g	12 ml

– If necessary, administer half the dose into each buttock.

Duration

– Single dose. If there is no improvement after 24 hours, a second dose may be administered.

Contra-indications, adverse effects, precautions

– Do not administer to patients with:
  • history of allergic reaction or bone marrow depression during a previous treatment with chloramphenicol;
  • G6PD deficiency.
– May cause:
  • dose-related haematological toxicity (bone marrow depression, anaemia, leucopenia, thrombocytopenia), allergic reactions. In these events, stop treatment immediately;
  • gastrointestinal disturbances, peripheral and optic neuropathies.
– Avoid or monitor combination with potentially haematotoxic drugs (carbamazepine, cotrimoxazole, flucytocine, pyrimethamine, zidovudine, etc.).
– *Pregnancy*: ***CONTRA-INDICATED***
– *Breast-feeding*: ***CONTRA-INDICATED***

Remarks

– Oily chloramphenicol is not recommended as chemoprophylaxis for meningitis contacts during epidemics. All suspected cases must be examined at the first signs of the disease.
– Shake the injection suspension before administration.
– *Storage*: *below 25°C* –

CHLORPROMAZINE



Prescription under medical supervision

Therapeutic action

– Sedative antipsychotic (neuroleptic)

Indications

– Agitation or aggressive behaviour in patients with acute or chronic psychosis

Presentation and route of administration

– 50 mg in 2 ml ampoule (25 mg/ml) for IM injection

Dosage

– Adult: 25 to 50 mg by IM injection. A second dose may be administered if necessary after at least an hour.
– Subsequent doses, if needed, should be given at 6 to 8 hour intervals (max. 150 mg/day).
– Administer one-quarter of the usual dose in elderly patients.

Duration

– Change to oral treatment as soon as possible

Contra-indications, adverse effects, precautions

– Do not administer to patients with closed-angle glaucoma, prostate disorders; to elderly patients with dementia (e.g. Alzheimer's disease).
– Administer with caution and carefully monitor use in patients > 60 years; patients with epilepsy, chronic constipation, renal or hepatic impairment, Parkinson's disease, myasthenia gravis.
– May cause:
  • orthostatic hypotension (keep the patient in the supine position for 30 minutes after injection);
  • anticholinergic effects (dry mouth, blurred vision, urinary retention, constipation, tachycardia);
  • extrapyramidal syndrome, dyskinesia, photosensibilisation; neuroleptic malignant syndrome (unexplained hyperthermia with neuromuscular disorders), rare but requiring immediate treatment discontinuation.
– Avoid combination with: drugs which lower the seizure threshold (mefloquine, chloroquine, tramadol, tricyclic or SSRI antidepressants); CNS depressants (opioid analgesics, sedatives, H1 antihistamines, etc.); drugs known to have anticholinergic effects (amitriptyline, atropine, clomipramine, promethazine, etc.); antidiabetics, lithium.
– *Pregnancy: avoid (risk of maternal hypotension)*
– *Breast-feeding: avoid*

Remarks

– Avoid contact with skin (contact dermatitis reported in nursing personnel).
– *Storage: below 25°C –*

CLINDAMYCIN



Prescription under medical supervision

Therapeutic action

– Lincosamide antibacterial

Indications

– Second-line treatment of severe staphylococcal and/or streptococcal infections (e.g. cellulitis, erysipelas, pneumonia)
– Necrotizing skin and soft tissues infections (necrotizing fasciitis, gas gangrene, etc.), severe cutaneous anthrax, in combination with other antibacterials

Presentation and route of administration

– 300 mg ampoule (150 mg/ml, 2 ml), for IV infusion in 0.9% sodium chloride or 5% glucose, to be administered over 30 minutes. DO NOT ADMINISTER FOR IV WITHOUT DILUTION.

Dosage

– *Severe staphylococcal and/or streptococcal infections*
Neonate 0 to 7 days (< 2 kg): 10 mg/kg/day in 2 divided infusions
Neonate 0 to 7 days (≥ 2 kg): 15 mg/kg/day in 3 divided infusions
Neonate 8 days to < 1 month (< 2 kg): 15 mg/kg/day in 3 divided infusions
Neonate 8 days to < 1 month (≥ 2 kg): 30 mg/kg/day in 3 divided infusions
Child 1 month and over: 30 mg/kg/day in 3 divided infusions (max. 1800 mg/day)
Adult: 1800 mg/day in 3 divided infusions
– *Necrotizing infections, severe cutaneous anthrax*
Neonate: as above
Child 1 month and over: 40 mg/kg/day in 3 divided infusions (max. 2700 mg/day)
Adult: 2700 mg/day in 3 divided infusions

Dilute each dose of clindamycin in 5 ml/kg of 0.9% sodium chloride or 5% glucose in children less than 20 kg and in a bag of 100 ml of 0.9% sodium chloride or 5% glucose in children over 20 kg and adults.

Duration

– *Cellulitis, erysipelas*: 7 to 10 days; *pneumonia*: 10 to 14 days; *severe cutaneous anthrax*: 14 days; *necrotizing infections*: according to clinical evolution. Change to oral route as soon as possible.

Contra-indications, adverse effects, precautions

– Do not administer to patients with allergy to lincosamides or history of pseudo-membranous colitis.
– Reduce dosage in patients with hepatic impairment.
– May cause: pseudomembranous colitis, rash, jaundice, severe allergic reactions. In these cases, stop treatment.
– In the event of pseudomembranous colitis, treat for *Clostridium difficile* infection (oral metronidazole).
– *<u>Pregnancy</u>: no contra-indication*
– *<u>Breast-feeding</u>: use only when there are no therapeutic alternative. Check infant's stools (risk of pseudomembranous colitis).*

Remarks

– Do not mix with other drugs in the same infusion bottle.
– Some presentations contain benzyl alcohol and should not be used in neonates.
– *<u>Storage</u>: below 25°C* –

CLOXACILLIN

Prescription under medical supervision

Therapeutic action

– Penicillin antibacterial

Indications

– Severe infections due to streptococci and/or staphylococci: meningitis, pneumonia, omphalitis, septicaemia of cutaneous origin, endocarditis, osteomyelitis, etc.
– Erysipelas, cellulitis

Presentation and route of administration

– Powder for injection, 500 mg vial, to be dissolved in 4 ml of water for injection, for IV infusion in 0.9% sodium chloride or 5% glucose, to be administered in 60 minutes

Dosage

– *Severe infections*
  • Neonate:
    - 0 to 7 days (< 2 kg): 100 mg/kg/day in 2 divided infusions
    - 0 to 7 days (≥ 2 kg): 150 mg/kg/day in 3 divided infusions
    - 8 days to < 1 month (< 2 kg): 150 mg/kg/day in 3 divided infusions
    - 8 days to < 1 month (≥ 2 kg): 200 mg/kg/day in 4 divided infusions
  • Child 1 month and over: 100 to 200 mg/kg/day in 4 divided infusions (max. 8 g/day)
  • Adult: 8 g/day in 4 divided infusions (12 g/day for septicaemia, endocarditis, osteomyelitis or if resistance is suspected and in patients ≥ 85 kg)

Age	Weight	500 mg vial (diluted in 4 ml, 125 mg/ml)
1 to < 3 months	4 to < 6 kg	1 ml x 4
3 months to < 1 year	6 to < 10 kg	2 ml x 4
1 to < 5 years	10 to < 20 kg	4 ml x 4 (1 vial x 4)
5 to < 8 years	20 to < 28 kg	8 ml x 4 (2 vials x 4)
8 to < 12 years	28 to < 38 kg	12 ml x 4 (3 vials x 4)
≥ 12 years and adult	≥ 38 kg	16 ml x 4 (4 vials x 4)

Dilute each dose of cloxacillin in 5 ml/kg of 0.9% sodium chloride or 5% glucose in children less than 20 kg and in a bag of 100 ml of 0.9% sodium chloride or 5% glucose in children over 20 kg and adults.

– *Erysipelas, cellulitis*
  Neonate, child and adult: half of above dose

Duration

– Change to oral route as soon as possible with amoxicillin/clavulanic acid or cefalexin depending on the indication. Do not use oral cloxacillin for completion treatment following parenteral therapy.

Contra-indications, adverse effects, precautions

– Do not administer to penicillin-allergic patients.
– Administer with caution to patients with allergy to cephalosporins (cross-sensitivity may occur) or with renal impairment (reduce the dose).
– May cause: gastrointestinal disturbances (particularly diarrhoea), allergic reactions sometimes severe; rarely, haematological disorders.
– Do not combine with methotrexate (increased methotrexate toxicity).
– *Pregnancy and breast-feeding: no contra-indication*

Remarks

– Dicloxacillin, flucloxacillin and oxacillin are used for the same indications.
– Do not mix with other drugs in the same infusion bag.
– *Storage: below 25°C –*
  Reconstituted solution must be used immediately.

DEXAMETHASONE

Prescription under medical supervision

Therapeutic action

– Corticosteroid

Indications

– Inflammatory syndrome in severe infections: severe typhoid fever, acute subglottic laryngitis, etc.
– Foetal lung maturation, in the event of threatened premature delivery before 34 weeks of gestation

Presentation and route of administration

– 4 mg dexamethasone phosphate in 1 ml ampoule (4 mg/ml) for IM or IV injection or infusion

Dosage and duration

– *Inflammatory syndrome in severe infections*
  Dosage and duration vary according to severity and clinical response:
  Child: 0.2 to 0.4 mg/kg/day
  Adult: initial dose of 0.5 to 24 mg/day
– *Foetal lung maturation*
  Administer to the mother: 6 mg by IM injection every 12 hours for 2 days (total dose: 24 mg)

Contra-indications, adverse effects, precautions

– For systemic infections, only administer if patient is under antibiotic treatment.
– In the event of treatment longer than 10 days, decrease doses gradually to avoid adrenal gland failure.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Foetal lung maturation:
  • after 34 weeks of gestation, corticosteroid treatment is not indicated;
  • dexamethasone may be replaced by betamethasone: 2 doses of 12 mg by IM injection at 24-hour interval (total dose: 24 mg).
– For allergic reactions (Quinke's oedema, anaphylactic shock) and status asthmaticus, use hydrocortisone.
– Dexamethasone acetate, insoluble in water, is a suspension used only for local treatment: intra-articular or peri-articular injection, epidural injection (sciatica).
– *Storage: below 25°C –*
  The solution precipitates at 0°C, it must not be exposed to cold temperatures.

DIAZEPAM emulsion



Prescription under medical supervision

For administration, equipment for ventilation must be available and ready for use.

Therapeutic action

– Anxiolytic, sedative, anticonvulsant, muscle relaxant

Indications

– Muscle spasms due to tetanus in neonates

Presentation and route of administration

– 10 mg ampoule (5 mg/ml, 2 ml) emulsion for slow IV injection (3 to 5 minutes) or infusion in 10% glucose (if not available, 5%). DO NOT ADMINISTER BY IM OR RECTAL ROUTE.

Dosage and duration

– The dosage range is variable, depending on the severity of symptoms and clinical response. For information:
  • 0.1 to 0.3 mg/kg by slow IV injection, to be repeated every 1 to 4 hours
  or
  • 0.1 to 0.5 mg/kg/hour by continuous perfusion, preferably via an electric syringe
  Dilute one ampoule of diazepam emulsion (10 mg) in a syringe of 50 ml of 10% glucose to obtain a solution containing 0.2 mg of diazepam per ml.
  Every 6 hours, discharge the content remaining in the electric syringe and prepare a new syringe for 6 hours.

Weight	Dose	Diluted solution 0.2 mg/ml
2.5 kg	0.1 mg/kg/hour	1.3 ml/hour
	0.3 mg/kg/hour	3.8 ml/hour
	0.5 mg/kg/hour	6.2 ml/hour
3 kg	0.1 mg/kg/hour	1.5 ml/hour
	0.3 mg/kg/hour	4.5 ml/hour
	0.5 mg/kg/hour	7.5 ml/hour
3.5 kg	0.1 mg/kg/hour	1.8 ml/hour
	0.3 mg/kg/hour	5.2 ml/hour
	0.5 mg/kg/hour	8.8 ml/hour

Contra-indications, adverse effects, precautions

– Do not administer to patients with severe respiratory insufficiency or severe hepatic impairment.
– Reduce the dose by one half in patients with renal or hepatic impairment.
– May cause:
  • hypotension, respiratory depression, if injected too rapidly by IV route and if large doses are administered;
  • drowsiness, muscle weakness;
  • in the event of overdose: hypotonia, lethargy, respiratory distress, coma.
– Avoid and monitor in combination with:
  • drugs containing alcohol, opioid analgesics, other anticonvulsants, etc. (increased sedation);
  • enzyme inducers such as nevirapine, ritonavir, phenobarbital, phenytoin, etc. (efficacy of diazepam reduced);
  • omeprazole, macrolides, ritonavir, fluconazole, etc. (effects of diazepam increased);
  • phenytoin (phenytoin plasmatic concentrations modified).

Remarks

– Diazepam is subject to international controls: follow national regulations.
– Do not mix with other drugs in the same syringe or infusion.
– *Storage: below 25°C –*
  Emulsion diluted in glucose can be kept 6 hours maximum.

DIAZEPAM solution



Prescription under medical supervision

– Do not use this solution in neonates, use diazepam *emulsion* only.
– For IV administration, equipment for ventilation must be available and ready for use.

Therapeutic action

– Anxiolytic, sedative, anticonvulsant, muscle relaxant

Indications

– Seizures
– Muscle spasms due to tetanus in children over 1 month and adults
– Severe agitation in adults

Presentation and route of administration

– 10 mg ampoule (5 mg/ml, 2 ml) for IM or slow IV injection (3 to 5 minutes) or infusion in 0.9% sodium chloride or 5% glucose
– The injectable solution may be used rectally.

Dosage and duration

– *Seizures*
Child:
• *Rectal route:* 0.5 mg/kg/dose (= 0.1 ml/kg/dose); max. 10 mg/dose

Age	Weight	10 mg/2 ml solution*
6 to < 12 months	7 to < 10 kg	1 ml
1 to < 3 years	10 to < 14 kg	1.25 ml
3 to < 5 years	14 to < 19 kg	1.5 ml
≥ 5 years and adult	≥ 19 kg	2 ml

* Use a 1 ml syringe without needle and insert it 2 to 3 cm into the rectum, or attach a nasogastric tube n°8 cut to a length of 2 to 3 cm to the tip of a 2 ml syringe. Hold the buttocks together for a few minutes.

• *Slow IV injection:* 0.3 mg/kg/injection (= 0.06 ml/kg/injection); max. 10 mg/injection

Adult:
Slow IV injection or rectal route: 10 mg/dose (= 2 ml/dose)

In children and adults, if seizures do not stop within 5 minutes after the first dose, repeat the same dose once, whatever the route of administration.

– *Muscle spasms due to tetanus*
The dosage range is variable, depending on the severity of symptoms and clinical response. For information:
Child and adult:
• 0.1 to 0.3 mg/kg by slow IV injection, to be repeated every 1 to 4 hours
or
• 0.1 to 0.5 mg/kg/hour by continuous perfusion over 24 hours

– *Severe agitation*
Adult: 10 mg by IM injection, to be repeated once after 30 to 60 minutes if necessary

Contra-indications, adverse effects, precautions

– Do not administer to neonates (contains benzyl alcohol) and to patients with severe respiratory insufficiency or severe hepatic impairment.
– Reduce the dose by one half in elderly patients and patients with renal or hepatic impairment.
– May cause:
  • pain at injection site, drowsiness, muscle weakness;
  • hypotension, respiratory depression, if injected too rapidly by IV route and if large doses are administered (tetanus);
  • in the event of overdose: hypotonia, lethargy, respiratory distress, coma.
– Avoid and monitor in combination with:
  • drugs containing alcohol, opioid analgesics, neuroleptics, anti-histamines, antidepressants, other anticonvulsants, etc. (increased sedation);
  • enzyme inducers such as rifampicin, rifabutin, nevirapine, ritonavir, phenobarbital, phenytoin, carbamazepine, griseofulvin, etc. (efficacy of diazepam reduced);
  • omeprazole, macrolides, ritonavir, isoniazid, fluconazole, itraconazole, etc. (effects of diazepam increased);
  • phenytoin (phenytoin plasmatic concentrations modified).
– *Pregnancy and breast-feeding: avoid if possible, except if vital (passage through the placenta and breast milk)*

Remarks

– Diazepam is subject to international controls: follow national regulations.
– For administration by infusion, the concentration of diazepam in the solution should not exceed 0.25 mg/ml (e.g. 1 mg in at least 4 ml).
– Do not mix with other drugs in the same syringe or infusion.
– *Storage: below 25°C –*

2

DICLOFENAC



Prescription under medical supervision

Therapeutic action

– Non-steroidal anti-inflammatory drug, analgesic, antipyretic

Indications

– Moderate pain, particularly due to inflammation (acute sciatic neuralgia, renal colic, postoperative pain etc.)

Presentation and route of administration

– 75 mg in 3 ml ampoule (25 mg/ml) for deep IM injection or infusion

Dosage

– Adult : 75 mg by deep IM injection; combine with 50 mg by oral route if necessary
– For postoperative pain, may be administered by infusion: 75 mg over 30 to 120 minutes; to be repeated after 4 to 6 hours if necessary.
  Maximum dose: 150 mg/day

Duration

– Maximum 2 to 3 days; change to oral treatment as soon as possible.

Contra-indications, adverse effects, precautions

– Do not administer in case of:
  • renal impairment, uncorrected dehydration or hypovolaemia, severe malnutrition;
  • peptic ulcer;
  • hypersensitivity to other NSAID (aspirin, ibuprofen, indometacin etc.), hepatic impairment, severe infection;
  • coagulation defects, surgery with risk of major blood loss.
– May cause: renal impairment, gastrointestinal disturbances, allergic reactions (rash, eczema, bronchospasm).
– Administer with caution to elderly or asthmatic patients.
– Do not combine with other NSAID (aspirin, ibuprofen, indometacin etc.), diuretics, anticoagulants.
– *Pregnancy*: ***CONTRA-INDICATED***
– *Breast-feeding*: ***CONTRA-INDICATED***

Remarks

– For infusion, use a solution of 5% glucose or 0.9% sodium chloride and add 0.5 ml of 8.4% sodium bicarbonate per 500 ml.
– Diclofenac is not included in the WHO list of essential medicines.
– *Storage: below 25°C –*

DIGOXIN



Prescription under medical supervision

Therapeutic action
– Cardiotonic

Indications
– Supraventricular arrhythmias (fibrillation, flutter, paroxysmal tachycardia)
– Heart failure

Presentation and route of administration
– 500 µg ampoule (250 µg/ml, 2 ml) for slow IV injection or infusion in 5% glucose or 0.9% sodium chloride

Dosage
– Adult:
  - loading dose: 500 to 1000 µg
    The loading dose can be administered either by intravenous infusion as a single dose given over 2 hours minimum or in divided doses, by slow IV injections over 5 minutes minimum.
  - maintenance dose: change to oral treatment
– Reduce the dose by one half in elderly patients and in patients with renal impairment.

Contra-indications, adverse effects, precautions
– Do not administer to patients with bradycardia, ill defined arrhythmia, coronary artery disease.
– It is essential to monitor pulse in the initial stage of treatment.
– Narrow margin between therapeutic and toxic dose.
– May cause in the event of overdose: gastrointestinal disturbances (nausea, vomiting, diarrhoea), blurred vision, headache, confusion, conduction and rhythm disorders. If so, reduce dose or stop treatment.
– Do not combine with calcium, particularly by IV route (serious arrhythmias).
– Monitor combination with:
  - amiodarone, macrolides, itraconazole, quinine, chloroquine (increased digoxin concentration);
  - potassium-depleting drugs: diuretics, corticoids, amphotericin B (increased risk of digoxin toxicity).
– Monitor if possible serum potassium level in patients taking potassium-depleting drugs and serum creatinine level in patients with renal impairment.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks
– A loading dose may be administered in arrhythmias if a rapid digitalisation is required. It is usually not required for heart failure.
– *Storage: below 25°C –*

EFLORNITHINE



Prescription under medical supervision

Therapeutic action

– Trypanocide

Indications

– Meningoencephalitic stage of African trypanosomiasis due to *T.b. gambiense*, in combination with nifurtimox (first choice treatment) or in monotherapy if nifurtimox is not available or is contra-indicated

Presentation and route of administration

– 20 g in 100 ml ampoule (200 mg/ml) to be diluted in 250 ml of sterile distilled water (or, if not available, 0.9% sodium chloride), for IV infusion administered over 2 hours

Dosage and duration

– *In combination with nifurtimox*
  Child and adult: 400 mg/kg/day in 2 divided infusions administered at 12-hour intervals for 7 days

– *In monotherapy*
  Child under 12 years: 600 mg/kg/day in 4 divided infusions administered at 6-hour intervals for 14 days
  Adult: 400 mg/kg/day in 4 divided infusions administered at 6-hour intervals for 14 days

Contra-indications, adverse effects, precautions

– May cause: haematological disorders (anaemia, leucopenia, thrombocytopenia), gastrointestinal disturbances (diarrhoea, abdominal pain, vomiting), seizures, tremor, fever, deep tissue infection, headache, alopecia, dizziness.
– The catheter must be handled with great attention to avoid local or general bacterial superinfections: thoroughly disinfect the insertion site, protect the site with a sterile dressing, ensure secure catheter fixation and change the catheter every 48 hours or earlier in the event of phlebitis.
– *Pregnancy*: **CONTRA-INDICATED** *unless, due to the mother's general condition, treatment cannot be delayed until after delivery.*

Remarks

– When administering nifurtimox-eflornithine combined therapy, the dosage of nifurtimox in children and adults is 15 mg/kg/day in 3 divided doses at 8-hour intervals.
– Eflornithine is also called difluoromethylornithine or DFMO.
– *Storage: below 25°C –*
  Diluted solution must be kept refrigerated (2°C to 8°C) and used within 24 hours.

EPINEPHRINE = EPN = ADRENALINE



Prescription under medical supervision

Therapeutic action

– Sympathomimetic

Indications

– Severe anaphylactic reaction
– Cardiopulmonary arrest

Presentation and route of administration

– 1 mg in 1 ml ampoule (1 mg/ml) for **IM injection only**
– 1 mg in 1 ml ampoule (1 mg/ml) for **IV injection only** after dilution in 0.9% sodium chloride to obtain a solution containing 0.1 mg/ml

Before administration, check concentration and route of administration indicated on the ampoule.

Dosage

– *Severe anaphylactic reaction*
  IM epinephrine is the first line treatment (anterolateral part of the thigh), however use IV epinephrine in patients with circulatory collapse or those who deteriorate despite receiving two IM injections of epinephrine.
  • IM treatment
    Use *undiluted* solution (1 mg/ml = 1:1000) and a 1 ml syringe graduated in 0.01 ml:
    Child under 6 years: 0.15 ml
    Child from 6 to 12 years: 0.3 ml
    Child over 12 years and adult: 0.5 ml
    In children, if 1 ml syringe is not available, use a *diluted* solution, i.e. add 1 mg EPN to 9 ml of 0.9% sodium chloride to obtain a 0.1 mg/ml solution (1:10 000):
    Child under 6 years: 1.5 ml
    Child from 6 to 12 years: 3 ml
    Repeat after 5 minutes if there is no clinical improvement.
  • IV treatment
    Use a *diluted* solution, i.e. add 1 mg EPN to 9 ml of 0.9% sodium chloride to obtain a 0.1 mg/ml solution (1:10 000):
    Child: 0.1 ml/kg (0.01 mg/kg) administered over several minutes
    Adult: 1 to 2 ml (0.1 to 0.2 mg), to be repeated every 1 to 2 minutes, until improvement occurs

– *Cardiopulmonary arrest*
  Use a *diluted* solution by IV route, i.e. add 1 mg EPN to 9 ml of 0.9% sodium chloride to obtain a 0.1 mg/ml solution (1:10 000):
  Child: 0.1 ml/kg (0.01 mg/kg), to be repeated every 3 to 5 minutes, until improvement occurs
  Adult: 10 ml (1 mg), to be repeated every 3 to 5 minutes, until improvement occurs

Contra-indications, adverse effects, precautions

– Administer with caution to patients with hypertension, angina, ischaemic heart disease, hyperthyroidism and to elderly patients.
– Do not exceed indicated dose: risk of arrhythmia.
– *Pregnancy and breast-feeding: no contra-indication*

Remarks

– Epinephrine is colourless: discard any ampoules with a pink or brownish colour.
– Also comes in 0.1 mg/ml (1:10 000 solution) ampoules.
– *Storage*:

ETONOGESTREL subdermal implant

Prescription under medical supervision

Therapeutic action

– Hormonal contraceptive, progestogen

Indications3

– Long-term hormonal contraception

Presentation and route of administration

– Flexible rod containing 68 mg of etonogestrel, in a sterile disposable applicator, to be inserted subdermally into the inner side of the non-dominant arm, 6 to 8 cm above the elbow crease, under local anaesthesia and aseptic conditions

Dosage

– *If no current contraception, the implant is inserted:*
  • during the first 7 days of menstruation or immediately after abortion
  • after childbirth: as of the 4th week postpartum if the woman breastfeeds or as of the 21st day postpartum if the woman does not breastfeed

– *When switching from another contraceptive method, the implant is inserted:*
  • for an oral estroprogestogen: the day after taking the last active tablet in the pack
  • for an oral progestogen: at any stage of the cycle
  • for an injectable progestogen: the day the next injection is due
  • for an intrauterine device or another implant: the day of its removal

However, if there is a risk that the woman may be lost to follow-up, the implant may be inserted as soon as the opportunity occurs, including before the timing proposed. If the implant is inserted later (in the absence of pregnancy), it is recommended to use condoms during the first 7 days after the insertion.

Duration

– As long as contraception is desired and it is well tolerated, for max. 3 years (2 years in obese women) after which it no longer provides contraception and must be changed.

Contra-indications, adverse effects, precautions

– Do not administer to patients with breast cancer, severe or recent liver disease, unexplained vaginal bleeding, current thromboembolic disorders.
– May cause: menstrual irregularities, amenorrhoea, menometrorrhagia, breast tenderness, headache, weight gain, itching, acne, mood changes, abdominal pain, gastrointestinal disturbances, allergic reactions.
– Hepatic enzyme inducers (rifampicin, rifabutin, nevirapine, ritonavir, phenobarbital, phenytoin, carbamazepine, griseofulvin, etc.) may reduce the contraceptive efficacy. Use a copper intrauterine device or condoms or injectable medroxyprogesterone or an oral contraceptive containing 50 micrograms ethinylestradiol (however there is still a risk of oral contraceptive failure and the risk of adverse effects is increased).
– *Pregnancy*: ***CONTRA-INDICATED***
– *Breast-feeding: it is recommended to wait 4 weeks after childbirth before inserting the implant.*

Remarks

– Implants provide long term contraception, their efficacy is not conditioned by observance. Fertility returns rapidly after removal of the implant.
– For the conditions for insertion or removal the implant, follow manufacturer's instructions.
– *Storage: below 25°C –*

FLUCONAZOLE

Prescription under medical supervision

Therapeutic action

– Antifungal

Indications

– Severe fungal infections, when oral administration is not possible:
  • Cryptococcal meningitis, in combination with amphotericin B
  • Severe oesophageal candidiasis

Presentation and route of administration

– 200 mg in 100 ml bag (2 mg/ml), for infusion

Dosage

– *Cryptococcal meningitis, in combination with amphotericin B*
  Child over 1 week: 12 mg/kg/once daily (max. 800 mg/day) administered over 20 minutes minimum (max. 5 ml/minute)
  Adult: 800 mg once daily, administered over 10 minutes minimum (max. 10 ml/minute)
– *Severe oesophageal candidiasis*
  Child over 1 week: 3 to 6 mg/kg once daily
  Adult: 200 mg once daily
  These doses may be increased up to 400 mg/day if necessary.

Duration

– Change to oral treatment as soon as possible.

Contra-indications, adverse effects, precautions

– Administer with caution to patients with hepatic or renal impairment, cardiac disorders (bradycardia, heart rhythm disorders, etc.).
– Reduce the dose by half in patients with renal impairment.
– May cause: gastrointestinal disturbances, headache, skin reactions sometimes severe, anaphylactic reactions; severe hepatic disorders, haematological (leukopenia, thrombocytopenia) and cardiac disorders (QT-prolongation). Stop treatment in the event of anaphylactic reaction, hepatic disorders or severe skin reaction.
– Avoid or monitor combination with:
  • drugs that prolong the QT interval (amiodarone, chloroquine, erythromycin, haloperidol, mefloquine, pentamidine, quinine);
  • warfarin, carbamazepine, phenytoin, rifabutin, benzodiazepines, calcium-channel blockers, certain antiretrovirals (e.g. nevirapine, saquinavir, zidovudine): increased blood concentration of these drugs.

Remarks

– For cryptococcocal meningitis, when amphotericin B is not available or not tolerated, fluconazole may be administered alone during the induction phase (same doses as the oral route).
– Do not add any drug in the infusion bag.
– *Storage: below 25°C. Do not store in a refrigerator.*

FUROSEMIDE

Prescription under medical supervision

Therapeutic action

– Diuretic

Indications

– Emergency treatment of:
  • Oedema caused by renal, hepatic or congestive heart failure
  • Hypertensive crisis (except that of pregnancy)
  • Pulmonary oedema

Presentation and route of administration

– 20 mg in 2 ml ampoule (10 mg/ml) for IM or slow IV injection

Dosage

– Child: 0.5 to 1 mg/kg/injection
– Adult: 20 to 40 mg/injection

Repeat after 2 hours if necessary.

– For *pulmonary oedema*: if an initial IV injection of 40 mg does not produce a satisfactory response within one hour, the dose may be increased to 80 mg by slow IV injection.

Duration

– According to clinical response;
– If prolonged use is required, change to oral treatment 3 hours after the last injection.

Contra-indications, adverse effects, precautions

– Do not administer in other types of oedema, especially those due to kwashiorkor.
– Do not administer in case of hepatic encephalopathy.
– May cause: hypokalaemia, especially in cases of cirrhosis, denutrition, congestive heart failure.
– Closely monitor combination with digoxin (furosemide enhances toxicity of digoxin).
– *Pregnancy*: ***CONTRA-INDICATED*** *to treat hypertension in pregnancy*
– *Breast-feeding: avoid (excreted in milk and may reduce milk production)*

Remarks

– If doses greater than 50 mg are required, it is recommended that they be given by IV infusion.
– *Storage: below 25°C –*

GENTAMICIN



Prescription under medical supervision

2

Therapeutic action

– Aminoglycoside antibacterial

Indications

– Severe bacterial infections: meningitis, pneumonia, pyelonephritis, postpartum upper genital tract infections, etc., in combination with other antibacterials

Presentation and route of administration

– 80 mg ampoule (40 mg/ml, 2 ml) for IM or slow IV injection (3 minutes) or IV infusion (30 minutes) in 0.9% sodium chloride or 5% glucose

Dosage

– *Meningitis in young children, in combination with ampicillin or cloxacillin*
  - Neonate:
    0 to 7 days (< 2 kg): 3 mg/kg once daily by IV injection or infusion
    0 to 7 days (≥ 2 kg): 5 mg/kg once daily by IV injection or infusion
    8 days to < 1 month: 5 mg/kg once daily by IV injection or infusion
  - Child 1 to 3 months: 7.5 mg/kg/day divided in 3 IV injections or infusions

– *Other severe infections*
  - Neonate : as above
  - Child 1 month and over and adult: 6 mg/kg once daily

For administration by IV infusion, dilute each dose of gentamicin in 5 ml/kg of 0.9% sodium chloride or 5% glucose in children less than 20 kg and in a bag of 100 ml of 0.9% sodium chloride or 5% glucose in children over 20 kg and in adults.

Duration

– According to indication and clinical response. Given the risk of renal and auditory toxicity, do not prolong treatment unnecessarily.

Contra-indications, adverse effects, precautions

– Do not administer to patients with allergy to aminoglycosides o auditory and vestibular damage.
– Administer with caution and reduce dosage (1 mg/kg/day) in patients with renal impairment.
– May cause: renal impairment, irreversible auditory and vestibular damage, blockage of neuromuscular transmission, allergic reactions.
– Do not combine with another aminoglycoside.
– Monitor combination with: furosemide, amphotericin B, vancomycin (enhanced renal and/or auditory toxicity); neuromuscular blockers, general anaesthetics (potentialization of their effects).
– <u>Pregnancy</u>: *administer only if clearly needed (risk of fetal ototoxicity).*
– <u>Breast-feeding</u>: *no contra-indication*

Remarks

– Do not mix with other drugs in the same syringe or infusion.
– Gentamicin is also used in the treatment of plague in pregnant and lactating women at a dose of 3 mg/kg/day for 10 days.
– Also comes in 40 mg ampoule (20 mg/ml, 2 ml).
– <u>Storage</u>: *below 25°C –*

GLUCOSE 50% = DEXTROSE 50%

Prescription under medical supervision

Indications

– Emergency treatment of severe hypoglycaemia

Presentation and route of administration

– 50% hypertonic glucose solution in 50 ml vial (500 mg/ml), for slow IV injection. NEVER BY IM OR SC INJECTION.

Dosage and duration

– Adult: 1 ml/kg by very slow IV injection (over 5 minutes)
– Check blood glucose level 30 minutes after injection. If blood glucose level is still < 3 mmol/l or < 55 mg/dl, administer a second dose or give oral glucose, according to the patient clinical condition.

Contra-indications, adverse effects, precautions

– May cause:
  • vein irritation;
  • severe tissue damage (necrosis) in the event of extravasation.
– The solution is viscous: use a large vein and a large calibre needle.

Remarks

– 50% glucose solution is too viscous, concentrated and irritant to be used in children.
– In children use 10% glucose solution. If ready-made 10% glucose solution is not available: add 10 ml of 50% glucose per 100 ml of 5% glucose to obtain a 10% glucose solution. The dose of 10% glucose to be administered is 5 ml/kg by very slow IV injection (over 5 minutes) or IV infusion.
– *Storage: below 25°C*

HALOPERIDOL



Prescription under medical supervision

Therapeutic action

– Antipsychotic (neuroleptic)

Indications

– Agitation or aggressive behaviour in patients with acute or chronic psychosis

Presentation and route of administration

– 5 mg in 1 ml ampoule (5 mg/ml) for IM injection

Dosage

– Adult: 5 mg by IM injection
– The total dose should not exceed 15 mg in 24 hours, with an interval of 2 to 8 hours between each dose.

Duration

– Change to oral treatment as soon as possible.

Contra-indications, adverse effects, precautions

– Do not administer to patients with cardiac disorders (cardiac failure, recent myocardial infarction, conduction disorders, bradycardia, etc.); to elderly patients with dementia (e.g. Alzheimer's disease).
– Administer with caution and carefully monitor use in patients > 60 years and patients with hypokalaemia, hyperthyroidism, renal or hepatic impairment, Parkinson's disease.
– May cause: drowsiness, orthostatic hypotension (keep the patient in the supine position for 30 minutes after injection), extrapyramidal syndrome, dyskinesia, ventricular arrhythmia; neuroleptic malignant syndrome (unexplained hyperthermia with neuromuscular disorders), rare but requiring immediate treatment discontinuation.
– Avoid combination with: carbamazepine, rifampicin, fluoxetine, lithium, drugs that prolong the QT interval (amiodarone, chloroquine, erythromycin, fluconazole, mefloquine, pentamidine, quinine).
– *Pregnancy: no contraindication*
– *Breast-feeding: avoid; if absolutely necessary, do not exceed 5 mg in 24 hours.*

Remarks

– Haloperidol decanoate is a long-acting form used in the long-term management of psychotic disorders in patients stabilised on oral treatment (100 mg every 3 to 4 weeks).
– *Storage: below 25°C*

HEPARIN



Prescription under medical supervision

Therapeutic action

- Anticoagulant
  By IV injection: acts immediately for about 2 to 4 hours
  SC injection: acts within 1 hour for about 8 to 12 hours

Indications

- Venous and arterial thrombosis: pulmonary embolism, myocardial infarction, thrombophlebitis
- Prevention of venous and arterial thrombosis, especially in pre-operative and postoperative period and in patients on bedrest

Prescription of heparin requires systematic monitoring of coagulation parameters.

Presentation and route of administration

- 1000 IU in 1 ml ampoule (1000 IU/ml) and 5000 IU in 1 ml ampoule (5000 IU/ml) for IV injection or infusion, diluted in an isotonic solution of glucose or sodium chloride
- 25 000 IU in 1 ml ampoule (25 000 IU/ml) for SC injection

Also comes in various concentrations (500 IU, 12 500 IU, 20 000 IU/ml) and volumes (0.5 ml, 2 ml, 5 ml). Check label before use.

Dosage

- *Curative treatment*
  - By IV route
    Child and adult: initial dose of 50 to 100 IU/kg followed by 400 to 600 IU/kg/day, by continuous infusion over 24 hours or by IV injection every 2 to 4 hours. Adjust dosage according to coagulation tests.
  - By SC route
    Child and adult: 1 SC injection every 12 hours. Start with an initial dose of 250 IU/kg and adjust dosage according to coagulation tests.
- *Preventive treatment*
  Usually: 5000 IU by SC injection 2 hours before surgery, repeated every 8 to 12 hours.
  Dosage depends on patient's weight and risk of thrombo-embolic complications: 150 IU/kg/day in 2 to 3 divided doses.

Duration

- About 7 to 10 days or more according to clinical response.
- In postoperative period, administer until fully ambulatory.
- For long-term therapy, administer heparin simultaneously with oral anticoagulants for 2 to 3 days before stopping heparin.

Contra-indications, adverse effects, precautions

- Do not administer if:
  - haemorrhage or risk of haemorrhage: haemophilia, active peptic ulcer, acute bacterial endocarditis, severe hypertension; in postoperative period after neurosurgery or ophtalmic surgery;
  - thrombocytopenia or history of heparin-induced thrombocytopenia.
- Do not administer by IM route. SC injections must be made deep into abdominal fat, between umbilicus and iliac crest.
- Intramuscular or intra-arterial injections and infiltrations are contra-indicated during heparin therapy.
- May cause:
  - severe thrombocytopenia, usually after 5 days of heparin, with thrombo-embolic complications requiring discontinuation of treatment;
  - localised reactions at the injection site, rarely, necrosis;
  - allergic reactions, osteoporosis after prolonged use, alopecia;
  - haemorrhage in case of overdosage, pre-existing lesions, trauma.

– Use with caution and reduce dosage in elderly patients and in hepatic or renal failure.
– Overdosage: neutralise heparin by slow IV injection of protamine. 1 mg protamine neutralises 100 IU of heparin.
  Reduce doses of protamine if more than 15 minutes has elapsed since heparin administration.
– Laboratory tests: monitor coagulation parameters in order to adjust dose. Partial thromboplastin time should be maintained at 1.5 to 2 times the control value (Howell's test at 2 to 3 times the control value).
– Monitor platelet count prior to initiation of treatment and then 2 times per week.
– Avoid combination with aspirin, non-steroidal anti-inflammatory drugs: increased risk of haemorrhage.
– Closely monitor clinical and biological parameters in case of combination with corticosteroids, dextran, and transition to an oral anticoagulant.
– *Pregnancy*: **CONTRA-INDICATED** *at the end of pregnancy (risk of haemorrhage during delivery)*
– *Breast-feeding: no contra-indication*

Remarks

– Preparations containing calcium salt of heparin are available. Heparin sodium is usually used by IV route. Both sodium and calcium heparin are used by SC route. There is a little difference in the action of these 2 medications.
– Do not mix with other drugs in the same syringe.
– *Storage: keep in a cool place (8°C to 15°C)* –

HYDRALAZINE



Prescription under medical supervision

Therapeutic action

– Antihypertensive vasodilatator

Indications

– Hypertension in pregnancy, in case of severe symptoms or when oral treatment is not possible

Presentation and route of administration

– Powder for injection, in 20 mg vial, to be dissolved in 1 ml of water for injection, for IV infusion or slow diluted IV injection

Dosage

Dosage should be adjusted according to blood pressure (BP). The goal is to reduce the blood pressure to 140/90 mmHg. Diastolic BP must not fall below 90 mmHg.

– *By IV infusion*
  - Dilute 100 mg (5 vials of reconstituted hydralazine solution) in 500 ml of 0.9% sodium chloride or Ringer lactate, to obtain a solution containing 200 micrograms/ml.
  - Initial dose: 200 to 300 micrograms/minute
    Maintenance dose: 50 to 150 micrograms/minute
  - Administer by increasing the rate up to 20 drops/minute (max. 30 drops/min), check BP every 5 minutes.
  - As soon as hypertension is controlled, decrease progressively the rate (15 drops/minute, then 10, then 5) until stopping infusion. An abrupt discontinuation may provoke a hypertensive crisis.

– *By slow diluted IV injection*
  - Dilute 20 mg (1 vial of reconstituted hydralazine solution in 1 ml of water for injection) in 9 ml of 0.9% sodium chloride, to obtain 10 ml of solution containing 2 mg/ml.
  - Administer 5 mg (2.5 ml of the diluted solution) over 2 to 4 minutes. Check BP for 20 minutes. If BP remains uncontrolled, repeat injection. Continue repeating if necessary, waiting 20 minutes between each injection (max. 20 mg total dose).

Duration

– According to clinical response. Change to oral treatment as soon possible with labetalol or methyldopa.

Contra-indications, adverse effects, precautions

– Administer with caution to patients with heart failure, coronary insufficiency, recent myocardial infarction, severe tachycardia, history of stroke.
– May cause:
  - hypotension, tachycardia, headache, gastrointestinal disturbances;
  - abrupt fall in maternal blood pressure with placental hypoperfusion and foetal death when administered too rapidly by IV injection or in case of overdose.
– Reduce doses in patients with renal or hepatic impairment.
– Do not exceed recommended dosage and administration rate. During administration, monitor maternal BP and pulse, as well as foetal heart rate.
– In the event of hypotension, administer Ringer lactate to maintain diastolic BP ≥ 90 mmHg.
– *Breast-feeding: no contra-indication*

Remarks

– For administration, only use sodium chloride 0.9% or Ringer lactate (incompatibility with glucose and other solutions).
– Do not mix with other drugs in the same syringe or infusion bottle.
– *Storage: below 25°C –*
  Reconstituted solution must be used immediately.

HYDROCORTISONE

Prescription under medical supervision

Therapeutic action

– Steroidal anti-inflammatory drug (corticosteroid)

Indications

– Symptomatic treatment of severe allergic and inflammatory reactions, e.g.: severe acute asthma (in addition to inhaled salbutamol), allergic angioedema, anaphylactic shock (as an adjunct to epinephrine)

Presentation and route of administration

– Powder for injection, 100 mg hydrocortisone (hemisuccinate, succinate or phosphate) in vial, to be dissolved in 2 ml water for injection, for IM or slow IV injection or infusion

Dosage and duration

– Child under 1 year: 25 mg/injection
– Child from 1 to 5 years: 50 mg/injection
– Child from 6 to 12 years: 100 mg/injection
– Adult: 100 to 500 mg/injection

Doses may be repeated 3 or 4 times daily according to the severity of the symptoms and the patient's response.

Contra-indications, adverse effects, precautions

– Avoid prolonged administration in patients with peptic ulcer, diabetes mellitus or cirrhosis.
– Administer with caution to patients receiving digitalis glycosides: increases digitalis toxicity associated with hypokalaemia.
– *Pregnancy: use only if clearly needed, for a short period.*
– *Breast-feeding: no contra-indication*

Remarks

– Hydrocortisone acetate is a suspension insoluble in water, used as a local treatment only: intra- or peri-articular injection, epidural (sciatic neuralgia).
– *Storage: below 25°C –*

HYOSCINE BUTYLBROMIDE = BUTYLSCOPOLAMINE

Prescription under medical supervision

Therapeutic action

- Antispasmodic

Indications

- Spasms of the gastrointestinal tract and genitourinary tract

Presentation and route of administration

- 20 mg in 1 ml ampoule (20 mg/ml) for IM, SC or slow IV injection

Dosage

- Child under 6 years: 5 mg/injection, to be repeated up to 3 times per day if necessary
- Child from 6 years to 12 years: 0.5 mg/kg/injection to be repeated up to 3 to 4 times per day if necessary
- Adult: 20 to 40 mg/injection, to be repeated if necessary; do not exceed 100 mg/day

Duration

- According to clinical response; no prolonged treatment.

Contra-indications, adverse effects, precautions

- Do not administer to patients with urethro-prostatic disorders, cardiac disorders, glaucoma.
- Do not administer to children with high fever.
- May cause: urinary retention, dryness of the mouth, constipation, blurred vision, tachycardia.
- Administer with caution to children under 6 years.
- Administer with caution and under close supervision to patients taking other anticholinergic drugs (antidepressants, neuroleptics, H-1 antihistamines, antiparkinsonians, etc.).
- *Pregnancy: no contra-indication;* NO PROLONGED TREATMENT
- *Breast-feeding: no contra-indication;* NO PROLONGED TREATMENT

Remarks

- Antispasmodic drugs are not included in the WHO list of essential medicines.
- *Storage: below 25°C –*

INSULIN

Prescription under medical supervision

General information

Therapeutic action

– Pancreatic hormone, antidiabetic

Classification

– There are 3 main types of insulin preparations, differing in onset and duration of action:

Administration by SC route	Short-acting insulin	Intermediate-acting insulin	Long-acting insulin
Onset	30 minutes to 1 hour	1 to 2 hours	2 to 4 hours
Time to peak	2 to 5 hours	4 to 12 hours	8 to 20 hours
Duration	6 to 8 hours	10 to 24 hours	24 to 36 hours
Description	solution	suspension	suspension
Appearance	clear	opalescent	opalescent

– Duration of action is indicated for each preparation by the manufacturer. For each preparation, onset and duration vary greatly according to the patient and route of administration.
– The type of insulin used depends on the type of diabetes, patient's age and blood glucose levels.

Indications

– Insulin-dependent diabetes
– Diabetes during pregnancy
– Degenerative complications of diabetes : retinopathy, neuropathy, etc.
– Non-insulin-dependent diabetics during periods of severe infection, trauma, surgery.

Dosage

– Dosage must be individualised. Frequency of administration depends on the type of insulin and the patient's response. There is no standardized protocol.
Never exceed 200 IU/day, whatever the type of insulin.

Duration

– *Insulin-dependent diabetics*: life-time treatment
– *Other cases*: according to clinical response and laboratory tests

Contra-indications, adverse effects, precautions

– Do not administer in patients with allergy to insulin (rare).
– May cause :
  • hypoglycaemia due to overdosage or inadequate diet. Treat mild hypoglycaemia with intake of oral sugar and IV injection of hypertonic glucose solution if severe;
  • local reactions: pain, erythema at the injection site, lipodystrophy. Rotate injection sites systematically and use all available sites (upper arm, thighs, abdomen, upper back).
– Patient monitoring: blood and urine glucose concentrations, urine ketone tests.
  Blood glucose concentrations should be maintained within the range of 4.4 to 8 mmol/litre under fasting (8 mmol = 1.4 g).
  Diabetes is controlled when:
  • there are no glucose and ketones in urine;
  • before-meal blood glucose levels are < 1.2 g/litre (< 6.67 mmol/litre);
  • postprandial blood glucose levels are ≤ 1.4 g/litre (< 7.78 mmol/litre).
– Treatment of diabetes must be initiated in hospital under close supervision.
  Treatment includes: insulin administration, specific diet, education and counselling under medical supervision (self-monitoring of blood glucose, self-administration of insulin, knowledge about signs of hypoglycaemia and hyperglycaemia).
– Closely monitor combination with:
  • drugs enhancing hypoglycaemic effect: acetylsalicylic acid, angiotensin-converting enzyme inhibitors, beta-blockers (which in addition, may mask symptoms of hypoglycaemia);
  • drugs increasing blood glucose levels: glucocorticoids, salbutamol, chlorpromazine, oral contraceptives.
– Avoid alcohol: enhances and prolongs hypoglycaemic effect of insulin.
– Use sterile technique.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Insulin is obtained by extraction from bovine or porcine pancreases. The term monocomponent insulin is used for highly purified insulin.
– Insulin of human sequence is prepared either semisynthetically by modification of porcine material or biosynthetically.
– Preparations of human or animal origin have the same hypoglycemic effect. There is generally no significant difference.
– Insulin cannot be administered by mouth since it is inactivated in the gastro-intestinal tract.

INTERMEDIATE-ACTING INSULIN
LONG-ACTING INSULIN

Prescription under medical supervision

Therapeutic action

– Insulin suspension modified by addition of protamine and/or zinc, in order to prolong the duration of action

Indications

– As for insulin in general, except in the emergency treatment of diabetic ketoacidosis and coma

Presentation and route of administration

– 400 IU of insulin suspension in 10 ml vial (40 IU/ml) for deep SC injection, administered with a calibrated syringe for IU-40 insulin. NEVER ADMINISTER BY IV INJECTION.

Also comes in solution containing 100 IU/ml, administered only with calibrated syringe for IU-100 insulin.
IM route may be used but SC route is less painfull and drug action is longer and more regular.

Dosage

– 20 to 40 IU/day divided in 2 injections for intermediate-acting insulin, in 1 or 2 injections for long-acting insulin.
  Administer 15 to 30 minutes before meals. Increase by 2 IU/day until reaching the blood glucose level required. Adjust dosage and frequency of injections according to patient's needs.
  Short-acting insulin is often administered in combination with an intermediate-acting or long-acting insulin.
  Examples of regimens:

Insulin	Administration
• Short-acting insulin • Intermediate-acting insulin	• 2 times/day before breakfast and lunch • at bedtime
• Short-acting insulin • Long-acting insulin	• 3 times/day before breakfast, lunch and dinner • at bedtime or before breakfast
• Intermediate-acting with or without short-acting insulin	• 2 times/day before breakfast and dinner

Contra-indications, adverse effects, precautions

– See "insulin: general information".
– Do not administer if known allergy to protamine.
– Shake suspension gently before use. Remove from the refrigerator 1 hour before administration or roll the vial between hands.

Remarks

– *Storage: to be kept refrigerated (2°C to 8°C) –*
  - *Do not freeze; discard if freezing occurs.*
  - *Most manufacturers consider that a solution stored by the patient at a temperature up to 25°C and protected from light is stable for 1 month.*

SHORT-ACTING INSULIN

Prescription under medical supervision

Therapeutic action

– Soluble insulin, sometimes called neutral insulin, regular insulin or unmodified insulin.

Indications

– As for insulin in general, particularly in cases of diabetic ketoacidosis and diabetic coma.

Presentation and route of administration

– 400 IU of insulin in 10 ml vial (40 IU/ml) for deep SC injection, IM or IV injection, administered with a calibrated syringe for IU-40 insulin

Also comes in solution containing 100 IU/ml, administered only with calibrated syringe for IU-100 insulin.

Dosage

– *Emergency treatment of ketoacidosis and diabetic coma*
  - Child: initial dose 0.1 IU/kg by direct IV injection followed by 0.3 IU/kg every 4 hours
  - Adult: initial dose of 5 to 20 IU by direct IV injection followed by 10 to 20 IU every hour via the drip tubing. When ketone bodies are cleared and blood glucose level has fallen to less than 20 mmol/litre, give 20 IU by SC injection every 4 to 6 hours according to blood glucose level.

  Treat dehydration with a sodium chloride solution, then glucose-saline solution.

  Correct cautiously acidosis with isotonic solution of bicarbonate and, if necessary, post-insulinic hypokalaemia.

– *Treatment of diabetes mellitus*

  Start with 5 IU, 15 minutes before meals, 3 to 4 times/day by SC injection. Adjust dosage according to blood glucose levels before and after meal. Adjustments should not exceed 10 IU/day.

  When hyperglycemia is controlled, an intermediate-acting insulin may be substituted in order to limit injections.

  Short-acting insulin may be mixed with intermediate-acting insulin in the proportion of 10 to 50%.

Contra-indications, adverse effects, precautions

– See "Insulin: general information".

Remarks

– The terms "cristalline insulin" and "neutral insulin" are used either for soluble insulin or intermediate and long-acting insulin.
– <u>*Storage*</u>*: to be kept refrigerated (2°C to 8°C) –*
  - *Do not freeze.*
  - *Most manufacturers consider that a solution stored by the patient at a temperature up to 25°C and protected from light is stable for 1 month.*

KETAMINE



Prescription under medical supervision

Therapeutic action

– General anaesthetic

Indications

– Induction and maintenance of general anaesthesia

Presentation and route of administration

– 250 mg in 5 ml ampoule (50 mg/ml) for IM, IV injection or infusion

2

Dosage

Child and adult:

– *Induction*
  • IV: 2 mg/kg to be injected slowly. Anaesthesia is produced within one minute and lasts 10 to 15 minutes.
  • IM: 10 mg/kg. Anaesthesia is produced within 5 minutes and lasts 15 to 30 minutes.

– *Maintenance*
  • IV: 0.5 to 1 mg/kg depending on recovery signs (approximately every 15 minutes)
  • IM: 5 mg/kg approximately every 20 to 30 minutes

Duration

– Depending on duration of the operation

Contra-indications, adverse effects, precautions

– Do not administer to patients with intraocular hypertension, pre-eclampsia.
– Administer with caution to patients with arterial or intracranial hypertension, coronary insufficiency, psychiatric disorders.
– May cause: hypertension, hypersalivation, hallucinations during recovery (less frequent in children or when injected IM), apnoea following rapid IV injection.
– Premedication to prevent hypersalivation and hallucinations:
  • atropine IV: 0.01 to 0.015 mg/kg + diazepam slow IV: 0.1 mg/kg, during induction
  or
  • atropine IM: 0.01 to 0.015 mg/kg + diazepam IM: 0.1 mg/kg, 30 minutes before induction
– Technical equipment for intubation and ventilation must be available and ready for use.
– *Pregnancy: no contra-indication, except in pre-eclampsia. For ceaserean sections, do not exceed 1 mg/kg by IV injection (risk of neonatal respiratory depression at higher doses).*
– *Breast-feeding: no contra-indication*

Remarks

– Ketamine has no muscle relaxant properties.
– In some countries, ketamine is on the list of narcotics: follow national regulations.
– Also comes in 10 ml ampoule containing 500 mg (50 mg/ml).
– *Storage: below 25°C –*

LABETALOL



Prescription under medical supervision

Therapeutic action

– Non cardioselective beta-blocker

Indications

– Hypertension in pregnancy, in case of severe symptoms or when oral treatment is not possible

Presentation and route of administration

– 100 mg ampoule (5 mg/ml, 20 ml) for IV injection

Dosage

Dosage should be adjusted according to blood pressure (BP). The goal is to reduce the blood pressure to 140/90 mmHg. Diastolic BP must not fall below 90 mmHg.

– One dose of 20 mg (4 ml) over at least one minute. If hypertension remains uncontrolled 5 and 10 minutes after injection, administer another dose of 20 mg (4 ml). Administer additional doses of 40 mg (8 ml) then 80 mg (16 ml) at 10 minute intervals as long as hypertension is not controlled (max. 300 mg total dose).

Duration

– According to clinical response. Change to oral treatment as soon as possible.

Contra-indications, adverse effects, precautions

– Do not administer to patients with asthma, chronic obstructive bronchopneumonia, heart failure, severe hypotension, bradycardia < 50/minute, atrio-ventricular heart blocks, Raynaud's syndrome, hepatic impairment.
– May cause:
  - bradycardia, orthostatic hypotension, heart failure, bronchospasm, hypoglycaemia, gastrointestinal disturbances, dizziness, headache, weakness, urinary retention;
  - abrupt fall in maternal blood pressure with placental hypoperfusion and foetal death when administered too rapidly by IV injection or in case of overdose.
– Administer with caution to patients with diabetes (risk of hypoglycaemia).
– Reduce dosage in patients with renal impairment.
– In the event of anaphylactic shock, risk of resistance to epinephrine.
– Avoid or monitor combination with: mefloquine, digoxin, amiodarone, diltiazem, verapamil (risk of bradycardia); tricyclic antidepressants, neuroleptics, other anti- hypertensive drugs (risk of hypotension).
– Monitor the newborn: risk of hypoglycaemia, bradycardia, respiratory distress occurring most often during the first 24 hours and until 72 hours after the birth.
– In the event of hypotension, administer Ringer lactate to maintain diastolic BP ≥ 90 mmHg.
– *Breast-feeding: no contra-indication*

Remarks

– *Storage: below 25°C –*

LEVONORGESTREL subdermal implant

Prescription under medical supervision

Therapeutic action

– Hormonal contraceptive, progestogen

Indications

– Long-term hormonal contraception

Presentation and route of administration

– Set of two flexible rods containing 75 mg of levonorgestrel, with a sterile applicator (reusable after sterilization or for single use only, depending on the presentation), to be inserted subdermally into the inner side of the non-dominant arm, 6 to 8 cm above the elbow crease, under local anaesthesia and aseptic conditions

Dosage

– *If no current contraception, the implant is inserted:*
  • during the first 7 days of menstruation or immediately after abortion
  • after childbirth: as of the 4th week postpartum if the woman breastfeeds or as of the 21st day postpartum if the woman does not breastfeed
– *When switching from another contraceptive method, the implant is inserted:*
  • for an oral estroprogestogen: the day after taking the last active tablet in the pack
  • for an oral progestogen: at any stage of the cycle
  • for an injectable progestogen: the day the next injection is due
  • for an intrauterine device or another implant: the day of its removal

However, if there is a risk that the woman may be lost to follow-up, the implant may be inserted as soon as the opportunity occurs, including before the timing proposed. If the implant is inserted later (in the absence of pregnancy), it is recommended to use condoms during the first 7 days after the insertion.

Duration

– As long as contraception is desired and it is well tolerated, for max. 5 years (4 years in obese women) after which it no longer provides contraception and must be changed.

Contra-indications, adverse effects, precautions

– Do not administer to patients with breast cancer, severe or recent liver disease, unexplained vaginal bleeding, current thromboembolic disorders.
– May cause: menstrual irregularities, amenorrhoea, menometrorrhagia, breast tenderness, headache, weight gain, itching, acne, mood changes, abdominal pain, gastrointestinal disturbances, allergic reactions.
– Hepatic enzyme inducers (rifampicin, rifabutin, nevirapine, ritonavir, phenobarbital, phenytoin, carbamazepine, griseofulvin, etc.) may reduce the contraceptive efficacy. Use a copper intrauterine device or condoms or injectable medroxyprogesterone or an oral contraceptive containing 50 micrograms ethinylestradiol (however there is still a risk of oral contraceptive failure and the risk of adverse effects is increased).
– <u>*Pregnancy*</u>: ***CONTRA-INDICATED***
– <u>*Breast-feeding*</u>: *it is recommended to wait 4 weeks after childbirth before inserting the implant.*

Remarks

– Implants provide long term contraception, their efficacy is not conditioned by observance. Fertility returns rapidly after removal of the implant.
– The duration of action of the levonorgestrel implant (5 years) is longer than that of the etonogestrel implant (3 years). However, the etonogestrel implant (one rod) is easier to insert and remove than the levonorgestrel implant (2 rods).
– For the conditions for insertion or removal the implant, follow manufacturer's instructions.
– <u>*Storage*</u>: *below 25°C –*

LIDOCAINE = LIGNOCAINE

Prescription under medical supervision

Therapeutic action

– Local anaesthetic

Indications

– Local anaesthesia:
  • minor operations: 1% lidocaine plain
  • dental surgery: 2% lidocaine (plain or with epinephrine)

Presentation and route of administration

– 1% solution in 20 and 50 ml vials (10 mg/ml), for SC infiltration
– 2% solution in 20 and 50 ml vials (20 mg/ml), for SC infiltration

Dosage

– The volume to be injected depends on the surface area to be anesthetised.
– Do not exceed:
  Child: 5 mg/kg/injection
  Adult: 200 mg = 20 ml of lidocaine 1% or 10 ml of lidocaine 2%

AGE	**0**	**2 months**	**1 year**	**5 years**	**15 years**	**ADULT**
WEIGHT		**4 kg**	**8 kg**	**15 kg**	**35 kg**	
1% solution, 10 mg/ml			2 to 3 ml	4 to 8 ml	9 to 15 ml	15 to 20 ml
2% solution, 20 mg/ml			1 to 1½ ml	2 to 4 ml	4 to 7 ml	7 to 10 ml

Duration

– One injection, repeated if necessary.

Contra-indications, adverse effects, precautions

– Do not administer if known allergy to lidocaine, impaired cardiac conduction.
– When anaesthetising the extremities, inject distally (at the base), in circle, without tourniquet and without epinephrine (adrenaline).
– Do not use lidocaine for the incision of abscesses: risk of spreading the infection.
– *Lidocaine with epinephrine (adrenaline):*
  • in dental surgery, epinephrine added to lidocaine prolongs anaesthesia;
  • never use solutions with epinephrine for the anaesthesia of extremities (fingers, penile nerve block): risk of ischemia and necrosis.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Anaesthesia is produced within 2 to 5 minutes and lasts 1 to 1.5 hours.
– Do not confuse with lidocaine 5% hyperbaric which is reserved for spinal anaesthesia.
– The more concentrated the lidocaine, the more localised the anaesthetic effect.
– To simplify protocols, use lidocaine 2% with epinephrine for dental anaesthesia and lidocaine 1% without epinephrine for cutaneous anaesthesia.
– *Storage: below 25°C –*

MAGNESIUM SULFATE = $MgSO4$



Prescription under medical supervision

2

Therapeutic action

– Anticonvulsant

Indications

– Severe pre-eclampsia: prevention of eclamptic seizures
– Eclampsia: treatment of eclamptic seizures and prevention of recurrence

Presentation and route of administration

– 5 g ampoule (0,5 g/ml, 10 ml) for IM injection or IV infusion

Dosage and duration

– *IV/IM protocol*
  4 g by IV infusion in 100 ml of 0.9% sodium chloride over 15 to 20 minutes then, 10 g by IM route (5 g in each buttock) then, 5 g by IM route every 4 hours (changing buttock for each injection)
– *IV protocol*
  4 g by IV infusion in 100 ml of 0.9% sodium chloride over 15 to 20 minutes then 1 g per hour by continuous IV infusion

Regardless of the protocol chosen:
– Continue the treatment for 24 hours after the delivery or the last seizure.
– If seizures persist or recur, administer a further 2 g (patients less than 70 kg) to 4 g by IV infusion, without exceeding 8 g total dose during the first hour.

Contra-indications, adverse effects, precautions

– Reduce the dose in patients with renal impairment; do not administer to patients with severe renal impairment.
– May cause:
  • pain at the injection site, warm flushes; decreased fetal heart rate;
  • in case of overdosage (hypermagnesaemia):
    - For the mother: diminished then absent patellar reflex (early sign), hypotension, drowsiness, confusion, difficulty in speaking, bradycardia, respiratory depression (respiratory rate < 12/minute).
    - For the neonate: hypotonia, neurobehavioural impairment, apnoea, respiratory depression.
– Do not combine with nifedipine.
– Check urine output every hour. In the event of decreased urine output (< 30 ml/hour or 100 ml/4 hour), stop magnesium sulfate and perform delivery as soon as possible. If delivery cannot be performed immediately in a woman with eclampsia, stop magnesium sulfate for one hour then resume magnesium sulfate perfusion until delivery.
– Check patellar reflex, blood pressure, heart and respiratory rate every 15 minutes during the first hour of treatment. If no signs of overdosage are observed, continue this surveillance every hour. If signs of overdosage are observed: stop magnesium sulfate and give 1 g calcium gluconate by slow IV route as an antidote (in this event, seizures may recur).
– *Breast-feeding: no contra-indication*

Remarks

– Also comes in ampoules containing 1 g (0.5 mg/ml, 2 ml) and many other dosages. Check the strength of the ampoule carefully before use.
– 1 g magnesium sulfate contains approximately 4 mmol (8 mEq) of magnesium.
– Do not mix with other drugs in the same syringe or infusion fluid.
– *Storage: below 25°C –*

MEDROXYPROGESTERONE

Prescription under medical supervision

Therapeutic action

– Hormonal contraceptive, progestogen

Indications

– Long term hormonal contraception

Presentation and route of administration

– 150 mg in 1 ml vial (150 mg/ml) for IM injection

Medroxyprogesterone is a suspension: shake vial well before use.

Dosage

– 150 mg per IM injection, one injection every 12 weeks. The following injections may be administered within the 2 weeks before the scheduled date and up to 2 weeks after, without the need for additional contraception.
– *If no current contraception, the first injection is given:*
  • during the first 5 days of menstruation or immediately after abortion
  • after childbirth: as of the 6th week if the woman breastfeeds or between the 1st and the 21st day postpartum if the woman does not breastfeed. In post-partum period, it is better to wait until the 5th day if possible, as the risk of bleeding is increased if the injection is administered between D0 and D4.
– *When switching from another contraceptive method, the first injection is given:*
  • for an oral oestroprogestogen or progestogen: the day after taking the last active tablet in the pack
  • for an intrauterine device or an implant: the day of its removal

However, if there is a risk that the woman may be lost to follow-up or if this is the only available or acceptable contraceptive, the injection may be given as soon as the opportunity occurs, including before the timing proposed. If the injection is given later (in the absence of pregnancy), it is recommended to use condoms during the first 7 days after injection.

Duration

– As long as contraception is desired.

Contra-indications, adverse effects, precautions

– Do not administer to patients with breast cancer, uncontrolled hypertension, current thromboembolic disorders, non-equilibrated or complicated diabetes, severe or recent liver disease, unexplained vaginal bleeding.
– May cause: menstrual irregularities, amenorrhoea, menometrorrhagia, breast tenderness, headache, weight gain, itching, acne, mood change, abdominal pain, gastrointestinal disturbances, allergic reactions.
– The contraceptive efficacy of medroxyprogesterone does not seem to be reduced in women taking hepatic enzyme inducers.
– *Pregnancy*: ***CONTRA-INDICATED***
– *Breast-feeding: it is recommended to wait 6 weeks after childbirth before starting injections.*

Remarks

– It may take as long as a year for fertility to return to normal after stopping injections.
– *Storage: below 25°C –*

MELARSOPROL



Prescription under medical supervision

Therapeutic action

– Trypanocide (arsenical derivative)

Indications

– Meningoencephalitic stage of African trypanosomiasis due to *T. b. gambiense* and *T. b. rhodesiense*

Presentation and route of administration

– 180 mg in 5 ml ampoule (36 mg/ml), 3.6 % solution in propylene glycol, for slow IV injection. NEVER BY IM OR SC INJECTION.

Dosage and duration

– Patients must be treated in hospital, under close medical supervision.
– Child and adult: 2.2 mg/kg (max. 5 ml) once daily for 10 consecutive days

Contra-indications, adverse effects, precautions

– May cause:
  • reactive encephalopathy (5-10% of cases): repeated or prolonged seizures, coma, psychical disorders, usually between the 5th and the 8th day of the ten-day treatment (but sometimes later, even after the patient has been discharged) or just before/during the 2nd course of the intermittent treatment;
  • arsenical reactions: headache, fever, tachycardia, hypertension, jaw pain, neurological disorders (hyperreflexia);
  • gastrointestinal disturbances, skin reactions (exfoliative dermatitis, urticaria), peripheral neuropathy, haematological disorders (haemolytic anaemia in patients with G6PD deficiency, agranulocytosis), hepatic or renal impairment, myocardial damage;
  • swelling, pain, phlebitis, venous sclerosis, necrosis at injection site in the event of extravasation during IV administration.
– Use a completely dry syringe: the solution precipitates in presence of water. As propylene glycol can dissolve plastic, the drug should preferably be administered using a glass syringe (only if sterilisation is reliable), otherwise inject immediately (but slowly) using a plastic syringe.
– *Pregnancy*: ***CONTRA-INDICATED***

Remarks

– Oral prednisolone is frequently associated during the course of treatment.
– For the meningoencephalitic stage of gambiense trypanosomiasis, the treatment of choice is nifurtimox + eflornithine (NECT).
– *Storage: below 25°C –*

METAMIZOLE = DIPYRONE = NORAMIDOPYRINE



Prescription under medical supervision

Use this drug only in serious situations where no alternative is available.
- **it is potentially harmful;**
- **it is forbidden to market this drug in many countries;**
- **it must never be prescribed as a first choice treatment.**

Therapeutic action
- Analgesic
- Antipyretic

Indications
- Severe pain
- High fever

Presentation and route of administration
- 1 g in 2 ml ampoule (500 mg/ml) for IM, SC or slow IV injection or infusion

Dosage
- Child: 10 mg/kg/injection
- Adult: 500 mg/injection

Repeat every 8 hours if necessary.

Duration
- According to clinical response

Contra-indications, adverse effects, precautions
- Do not administer in gastric ulcer.
- May cause: severe and fatal cases of agranulocytosis. The risk is unpredictable and independent of the administered dose.
- *Pregnancy: avoid*
- *Breast-feeding: avoid*

Remarks
- Metamizole is not included in the WHO list of essential medicines.
- *Storage: below 25°C*

METHYLERGOMETRINE



Prescription under medical supervision

Therapeutic action

– Uterotonic, oxytocic

Indications

– Treatment of postpartum haemorrhage due to uterine atony (preferably use oxytocin for this indication)

Presentation and route of administration

– 200 micrograms in 1 ml ampoule (200 micrograms/ml), for IM injection

Dosage

– Adult: 200 micrograms/injection, to be repeated every 2 to 4 hours if necessary, without exceeding a total of 5 injections

Contra-indications, adverse effects, precautions

– Do not administer during delivery or labour.
– Do not administer in case of allergy to ergot alkaloids (cabergoline, bromocriptine, ergotamine, etc.), severe hypertension, pre-eclampsia, eclampsia, and septicaemia.
– Do not combine with another ergot alkaloid.
– Administer with caution to patients with hepatic or renal impairment, ischemic disorders.
– Do not administer simultaneously with prostaglandins or oxytocin (addition of uterotonic activity).
– May cause: gastrointestinal disturbances, headache, paraesthesia, confusion, dizziness, tinnitus, hypertension, peripheral vasoconstriction, chest pain.
– Monitor combination with: metronidazole, azole antifungals, macrolides, protease inhibitors, efavirenz, fluoxetine (risk of ergotism).
– <u>Pregnancy</u>: ***CONTRA-INDICATED***
– <u>Breast-feeding</u>: *avoid*

Remarks

– Do not confuse with dihydroergotamine, another ergot alkaloid used for totally different indications.
– Methylergometrine is also called methylergonovine or methylergobasine.
– Ergometrine is another uterotonic used for the same indications.
– <u>Storage</u>: *to be kept refrigerated (2°C to 8°C). Do not freeze –*
  - *Expiry date indicated on the label is only valid if stored under refrigeration and protected from light. Exposure to heat and especially light causes the deterioration of the active ingredient and thus loss of efficacy.*
  - *The solution must be colourless. Discolouration indicated a deterioration of the active ingredient. Never use a coloured solution.*
  - *If refrigeration is not available, vials can be kept for one month on condition that they are protected from light and the temperature remains under 25°C.*

METOCLOPRAMIDE

Prescription under medical supervision

Therapeutic action
– Antiemetic (dopamine antagonist)

Indications
– Prevention or symptomatic treatment of nausea and vomiting in adults

Presentation and route of administration
– 10 mg in 2 ml ampoule (5 mg/ml) for IM or slow IV injection (3 to 5 minutes)

Dosage
– Adult: 10 mg every 8 hours if necessary

Duration
– According to clinical evolution, as short as possible

Contra-indications, adverse effects, precautions
– Do not administer to children < 18 years and to patients with gastrointestinal haemorrhage, obstruction or perforation.
– Reduce the dose by half in patients with severe renal impairment.
– Administer with caution and monitor use in patients > 60 years and patients with epilepsy or Parkinson's disease.
– May cause: drowsiness, dizziness, confusion, extrapyramidal symptoms, seizures (especially in epileptics), allergic reactions, cardiac disorders (hypotension, bradycardia, cardiac arrest); neuroleptic malignant syndrome (unexplained hyperthermia with neuromuscular disorders), rare but requiring immediate treatment discontinuation.
– Do not combine with levodopa (antagonism).
– Avoid combination with CNS depressants (opioid analgesics, antipsychotics, sedatives, antidepressants, antihistamines, etc.) and antihypertensive drugs (increased risk of hypotension).
– *Pregnancy: no contraindication*
– *Breast-feeding: no contraindication*

Remarks
– For postoperative nausea and vomiting in adults, efficacy of metoclopramide is limited: ondansetron is preferred.
– Metoclopramide is also used as a gastrointestinal prokinetic agent in patients receiving enteral feeding by a nasogastric tube in intensive care units.
– *Storage: below 25°C –*

METRONIDAZOLE

Prescription under medical supervision

Therapeutic action

– Antiprotozoal, antibacterial

Indications

– Severe infections due to anaerobic bacteria (*Bacteroides sp*, *Clostridium sp*, etc.)

Presentation and route of administration

– 500 mg in 100 ml vial or bag (5 mg/ml), for infusion, to be administered over 30 minutes and 60 minutes for neonates

Dosage

– Neonate:
  • 0 to 7 days: 15 mg/kg on D1 then, after 24 hours, 15 mg/kg/day in 2 divided doses
  • 8 days to < 1 month (< 2 kg): same doses
  • 8 days to < 1 month (≥ 2 kg): 30 mg/kg/day in 2 divided doses
– Child 1 month and over: 30 mg/kg/day in 3 divided doses (max. 1.5 g/day)
– Adult: 1.5 g/day in 3 divided doses

Duration

– According to indication. Change to oral treatment as soon as possible.

Contra-indications, adverse effects, precautions

– Do not administer to patients with allergy to metronidazole or another nitroimidazole (tinidazole, secnidazole, etc.).
– Do not drink alcohol during treatment (antabuse reaction).
– May cause: gastrointestinal disturbances, brownish urine, allergic reactions, headache, dizziness.
– Monitor combination with anticoagulants (increased risk of haemorrhage), lithium, phenytoin and ergometrine (increased plasma concentrations of these drugs).
– Administer with caution, reduce total daily dose to ⅓ and give once daily to patients with severe hepatic impairment.
– *Pregnancy: no contra-indication*
– *Breast-feeding: avoid (significantly excreted in milk)*

Remarks

– Metronidazole is as effective by oral route than by parenteral route.
– Do not add any drug in the infusion vial.
– *Storage: below 25°C –*

MORPHINE



Prescription under medical supervision

Therapeutic action
– Centrally acting opioid analgesic

Indications
– Severe pain, especially in surgery, trauma and neoplastic disease

Presentation and route of administration
– 10 mg ampoule (10 mg/ml, 1 ml) for SC, IM or IV injection

Dosage
– *SC and IM route*
  Child over 6 months and adult: 0.1 to 0.2 mg/kg/injection, to be repeated every 4 hours if necessary
– *IV route*
  Child over 6 months and adult: 0.1 mg/kg administered in fractionated doses (0.05 mg/kg every 10 minutes), to be repeated every 4 hours if necessary

Duration
– Change to oral treatment as soon as possible.

Contra-indications, adverse effects, precautions
– Do not administer to patients with severe respiratory impairment or decompensated hepatic impairment.
– May cause:
  • dose-related sedation and respiratory depression, nausea, vomiting, constipation, urinary retention, confusion, raised intracranial pressure, pruritus;
  • in the event of overdose: excessive sedation, respiratory depression, coma.
– Management of respiratory depression includes assisted ventilation and/or administration of naloxone. Monitor patient closely for several hours.
– Administer with caution to patients with respiratory impairment, head injury, raised intracranial pressure, uncontrolled epilepsy or urethroprostatic disorders.
– In elderly patients and in patients with severe renal or hepatic impairment: reduce doses by half and administer less frequently, according to clinical response (risk of accumulation).
– Do not combine with opioid analgesics with mixed agonist-antagonist activity such as buprenorphine, nalbuphine, pentazocine (competitive action).
– Increased risk of sedation and respiratory depression, when combined with alcohol and drugs acting on the central nervous system: benzodiazepines (diazepam, etc.), neuroleptics (chlorpromazine, haloperidol, etc.), antihistamines (chlorphenamine, promethazine), phenobarbital, etc.
– *Pregnancy and breast-feeding: no contra-indication. The child may develop withdrawal symptoms, respiratory depression and drowsiness when the mother receives morphine at the end of the 3rd trimester and during breast-feeding. In these situations, administer with caution, for a short period, at the lowest effective dose, and monitor the child.*

Remarks
– Administer an appropriate laxative (e.g. lactulose) if analgesic treatment continues more than 48 hours.
– Morphine is on the list of narcotics: follow national regulations.
– *Storage*:

NALOXONE



Prescription under medical supervision

Therapeutic action

– Specific opioid antagonist

Indications

– Respiratory depression induced by opioids (analgesia, anaesthesia, intoxication)
– Respiratory depression in newborns resulting from the administration of opioids to the mother

Presentation and route of administration

– 0.4 mg in 1 ml ampoule (0.4 mg/ml) for IV, IM injection or infusion in sodium chloride 0.9% or glucose 5%
Also comes in 10 ml ampoule containing 4 mg (0.4 mg/ml) and 2 ml ampoule containing 40 µg (20 µg/ml) for paediatric use.

Dosage

– Newborn: initial dose of 10 µg/kg by IV injection, followed by 10 µg/kg by IM injection every 90 minutes
– Child: 5 to 10 µg/kg by IV injection, repeated if necessary after 2 to 3 minutes, until adequate spontaneous ventilation is restored, followed by a continuous infusion of 1 to 5 µg/kg/hour, or by 5 to 10 µg/kg by IM injection every 90 minutes
– Adult: 1 to 3 µg/kg by IV injection, repeated if necessary after 2 to 3 minutes, until adequate spontaneous ventilation is restored, followed by a continuous infusion of 1 to 5 µg/kg/hour, or by 5 to 10 µg/kg by IM injection every 90 minutes

Duration

– The duration of action of naloxone (20 to 30 minutes by IV route) is shorter than that of opioids: administration must be maintained several hours even if breathing improves.

Contra-indications, adverse effects, precautions

– May cause:
  • tachycardia, fibrillation, hypertension, pulmonary oedema when given postoperatively, due to a sudden reversal of analgesia;
  • nausea, vomiting;
  • acute withdrawal syndrome in opioid-dependent patients.
– Administer with caution and reduce dosage in case of heart failure or coronary artery disease.
– Naloxone is used in addition to assisted ventilation and must be administered under close medical supervision.
– *Pregnancy: risks linked to respiratory depression appear greater than risks linked to naloxone.*
– *Breast-feeding: no contra-indication*

Remarks

– Naloxone is a specific opioid antidote. It cannot be used to antagonise the effects of other drugs producing CNS or respiratory depression.
– Efficacy in antagonising opioid effects depends not only on the dose of naloxone but also on the dose and potency of the specific opioid involved.
– IV route is preferred, use IM route if IV route is not feasible.
– *Storage:*

OMEPRAZOLE

Prescription under medical supervision

Therapeutic action

– Antiulcer drug (proton pump inhibitor)

Indications

– Peptic ulcer perforation

Presentation and route of administration

– Powder for injectable solution, 40 mg vial, to be dissolved in 100 ml of 0.9% sodium chloride or 5% glucose, for IV infusion

Dosage

– Adult: 40 mg once daily to be administered over 20 to 30 minutes

Duration

– Change to oral treatment as soon as the patient can eat.

Contra-indications, adverse effects, precautions

– May cause: headache, diarrhoea, skin rash, nausea, abdominal pain, dizziness.
– Avoid combination with itraconazole and ketoconazole (decreases efficacy of these drugs).
– Monitor combination with warfarin, digoxin, phenytoin.
– Do not exceed 20 mg/day in patients with severe hepatic impairment.
– *Pregnancy: no contra-indication*
– *Breast-feeding: avoid, administer only if clearly need*

Remarks

– Only use 0.9% sodium chloride or 5% glucose for dilution.
– Injectable omeprazole is not included in the WHO list of essential medicines.
– *Storage: below 25°C –*

ONDANSETRON

Prescription under medical supervision

Therapeutic action

– Antiemetic (serotonin 5-HT3 receptor antagonist)

Indications

– Prevention of post-operative nausea and vomiting in children
– Treatment of post-operative nausea and vomiting

Presentation and route of administration

– 4 mg ampoule (2 mg/ml, 2 ml) for slow IV injection (3 to 5 minutes)

Dosage and duration

– *Prevention of post-operative nausea and vomiting*
  Child over 1 month: 0.1 mg/kg at the end of surgery (max. 4 mg/injection)

– *Treatment of nausea and vomiting*
  Child over 1 month:
  • no prophylactic dose of ondansetron received: 0.1 mg/kg/injection, to be repeated every 8 hours if necessary
  • prophylactic dose of ondansetron received and late postoperative vomiting (≥ 6 hours after surgery): 0.1 mg/kg/injection, to be repeated every 6 hours if necessary
  Do not exceed 4 mg/injection and 3 injections/24 hours.
  Adult: 4 mg/injection, to be repeated every 8 hours if necessary (max. 3 injections/24 hours)

Contraindications, adverse effects, precautions

– Do not administer to children less than 1 month of age.
– Administer with caution and monitor use in patients with congenital long QT syndrome, cardiac insufficiency and bradycardia.
– Reduce the dose in patients with hepatic failure (max. 8 mg/day).
– May cause: headache, sensation of flushing or warmth, hiccups, constipation, heart rhythm disorders, QT interval prolongation, extrapyramidal reactions, seizures, cutaneous allergic reactions (Lyell's and Stevens-Johnson syndromes).
– Avoid or monitor combination with:
  • drugs that prolong the QT interval: amiodarone, bedaquilline, chloroquine, co-artemether, erythromycin, fluconazole, haloperidol, moxifloxacin, mefloquine, pentamidine, quinine, etc.;
  • serotonergics: fluoxetine, paroxetine, tricyclic antidepressants, etc.;
  • enzyme inducers: rifampicin, rifabutin, nevirapine, ritonavir, phenobarbital, phenytoin, carbamazepine, griseofulvin, etc. (efficacy of ondansetron reduced);
  • tramadol (antalgic effect reduced).
– *Pregnancy: may be used for this indication; not recommended for nausea and vomiting of pregnancy.*
– *Breast-feeding: not recommended*

Remarks

– *Storage: below 25°C –*

OXYTOCIN



Prescription under medical supervision

Therapeutic action

– Synthetic oxytocic

Indications

– Induction and augmentation of labour in the event of dynamic dystocia
– Treatment of postpartum haemorrhage due to uterine atony
– Prevention of postpartum haemorrhage, after vaginal delivery or caesarean section

Presentation and route of administration

– 10 IU in 1 ml ampoule (10 IU/ml) for IM or slow IV injection or infusion

Dosage

– *Induction and augmentation of labour*
Start an infusion of 5 IU in 500 ml or 10 IU in 1 litre of Ringer lactate or 0.9% sodium chloride. Initially 5 to 8 drops/minute, then increase by 5 to 8 drops/minute every 30 minutes (max. 60 drops/minute) until efficient contractions are obtained (3 contractions lasting 40 seconds over 10 minutes).

– *Treatment of postpartum haemorrhage due to uterine atony*
20 IU in 1 litre of Ringer lactate or 0.9% sodium chloride, administered over 2 hours (160 drops/minute). Simultaneously, 5 to 10 IU by slow IV injection, to be repeated if necessary until the uterus is retracted (max. total dose 60 IU).

– *Prevention of postpartum haemorrhage (vaginal delivery)*
5 to 10 IU by slow IV or IM injection before or after the delivery of placenta

– *Prevention of postpartum haemorrhage (caesarean section)*
10 IU by slow IV injection after cord clamping, then 20 UI in 1 litre of Ringer lactate or 0.9% sodium chloride, administered over 2 hours (160 drops/minute).

Duration

– According to clinical response

Contra-indications, adverse effects, precautions

– Do not administer by rapid IV injection (risk of hypotension with flushing and reflex tachycardia, uterine hypertonia and/or rupture, foetal distress).
– During labour:
  • Do not administer to patients with history of two caesarean sections or more.
  • Administer with caution and do not exceed 30 drops/minute in patients with history of single caesarean section and in grand multipara (risk of uterine rupture).
  • Respect the dosage and rate of administration, monitor uterine contractility and foetal heart rate.
– May cause: nausea, vomiting, heart rhythm disorders.
– Do not administer simultaneously with prostaglandins. Only administer oxytocin 6 hours after the last administration of prostaglandins.

Remarks

– <u>*Storage*</u>*: to be kept refrigerated (2°C to 8°C). Do not freeze –*
  • *Expiry date indicated on the label is only valid if stored under refrigeration and protected from light. Exposure to light and heat causes the deterioration of the active ingredient and thus loss of efficacy.*
  • *If refrigeration is not available, ampoules kept below 25°C and protected from light may be stored for a maximum of one month.*

PARACETAMOL = ACETAMINOPHEN

Prescription under medical supervision

Therapeutic action
- Analgesic, antipyretic

Indications
- Very high fever, only when oral administration is not possible
- Mild pain, only when oral administration is not possible

Presentation and route of administration
- 500 mg vial (10 mg/ml, 50 ml), for infusion

Dosage
- Neonate and child < 10 kg: 7.5 mg/kg (0.75 ml/kg) every 6 hours, to be administered over 15 minutes
  Do not exceed 30 mg/kg/day.
- Patient 10 to 50 kg: 15 mg/kg (1.5 ml/kg) every 6 hours, to be administered over 15 minutes
  Do not exceed 60 mg/kg/day.
- Patient over 50 kg: 1 g (100 ml) every 6 hours, to be administered over 15 minutes
  Do not exceed 4 g/day.

Duration
- According to clinical response. Change to oral route as soon as possible.

Contra-indications, adverse effects, precautions
- Do not administer to patients with severe hepatic impairment.
- Administer with caution to patients with moderate hepatic impairment, severe renal impairment, chronic alcoholism, malnutrition, dehydration.
- May cause (very rarely): malaise, hypotension and rash.
- Do not exceed indicated doses, especially in children and elderly patients. Paracetamol intoxications are severe (hepatic cytolysis).
- *Pregnancy: no contra-indication*
- *Breast-feeding: no contra-indication*

Remarks
- As the efficacy of IV paracetamol is not superior to the efficacy of oral paracetamol, the IV route is restricted to situations where oral administration is not possible.
- For mild pain, IV paracetamol is used alone or in combination with an NSAID administered parenterally.
- For moderate pain, IV paracetamol is used in combination with an NSAID and tramadol administered parenterally.
- For severe pain, IV paracetamol is used in combination with an NSAID and morphine administered parenterally.
- Paracetamol has no anti-inflammatory properties.
- Do not mix with other drugs in the same infusion bottle.
- *Storage: below 25°C –*

PENTAMIDINE



Prescription under medical supervision

Therapeutic action

– Antiprotozoal active against *Pneumocystis jiroveci* (*carinii*)

Indications

– Second-line treatment of pneumocystosis, in the event of contra-indication, intolerance or unresponsiveness to cotrimoxazole

Presentation and route of administration

– Powder for injection, 200 mg and 300 mg vials, to be dissolved in 10 ml water for injection, for IM injection or infusion in 250 ml of 5% glucose

Dosage and duration

– Child and adult: 4 mg/kg once daily by IM injection or slow infusion (over 60 minutes minimum) for 14 to 21 days

Contra-indications, adverse effects, precautions

– Do not administer to patients with severe renal impairment.
– Reduce dosage in patients with renal impairment.
– May cause:
  • aseptic abscess by IM route; venous thrombosis by IV route;
  • malaise, hypotension, particularly if administered too rapidly by IV route;
  • gastrointestinal disturbances; renal, hepatic and haematologic disorders; pancreatitis, arrhythmia, *torsades de pointes*, hypoglycaemia followed by hyperglycaemia.
– Do not combine with drugs inducing *torsades de pointes*: anti-arrhythmics, neuroleptics, tricyclic antidepressants, IV erythromycin, halofantrine, etc.
– Avoid combination with: mefloquine, cardiac glycosides, azole antifungals, drugs inducing hypokalaemia (diuretics, glucocorticoids, injectable amphotericin B, etc.).
– Administer on a empty stomach, keep the patient supine during injection and 30 min after.
– Monitor blood pressure, blood glucose level, serum creatinine level, blood counts.
– *Pregnancy and breast-feeding*: ***CONTRA-INDICATED****, except if vital and there is no therapeutic alternative.*

Remarks

– For the prophylaxis of pneumocystosis, pentamidine may be used by inhalation of nebulised solution using suitable equipment.
– Pentamidine is also used in the treatment of African trypanosomiasis and leishmaniasis.
– *Storage: below 25°C –*
  Once reconstituted, solution keeps for 24 hours maximum, between 2°C to 8°C.

PHENOBARBITAL



Prescription under medical supervision

Therapeutic action
– Anticonvulsant

Indications
– Emergency treatment of :
  • Convulsive status epilepticus
  • Seizures in neonates

Presentation and route of administration
– 200 mg in 1 ml ampoule (200 mg/ml) for IV perfusion or deep IM injection in the absence of venous access. DO NOT GIVE BY DIRECT RAPID IV INJECTION.

Dosage
– Neonates and children under 12 years: one dose of 20 mg/kg (max. 1 g). If necessary, a second dose of 10 mg/kg may be administered 15 to 30 minutes after the first dose (if administered by IV infusion) or 60 minutes after the first dose (if administered by IM injection).
– Children over 12 years and adults: one dose of 10 mg/kg (max. 1 g). If necessary, a second dose of 5 to 10 mg/kg may be administered 15 to 30 minutes after the first dose.

For administration by IV infusion:
Dilute the required dose in a 100 ml pouch of 0.9% sodium chloride or 5% glucose for patients weighing 20 kg or more and in 5 ml/kg of 0.9% sodium chloride or 5% glucose for children weighing less than 20 kg. Administer over at least 20 minutes. Do not administer more than 1 mg/kg/minute.
If the required dose is less than 1 ml, use a 1 ml syringe graduated 0.01 ml.

For administration by IM injection:
May be used undiluted. If the required dose is less than 1 ml, use a 1 ml syringe graduated 0.01 ml.

Contra-indications, adverse effects, precautions
– Do not administer in patients with severe respiratory depression.
– Do not administer by SC route (risk of necrosis).
– Administer with caution in the elderly, children and patients with respiratory insufficiency.
– May cause :
  • dose dependant respiratory depression (enhanced by diazepam), drowsiness; cutaneous and allergic reactions, sometimes severe;
  • hypotension, apnoea, laryngospasm, shock, especially if administered too rapidly by IV route.
– Monitor closely respiration and blood pressure during and after administration. Ensure that respiratory support (Ambu bag via face mask or intubation) and IV solutions for fluid replacement are ready at hand.
– Avoid combination with central nervous system depressants (opioid analgesics, sedatives, H1 antihistamines, etc.).
– *Pregnancy and breast-feeding: risks linked to status epilepticus appear greater than risks linked to phenobarbital.*

Remarks
– Do not mix with other drugs in the same syringe or infusion bag.
– Phenobarbital is subject to international controls: follow national regulations.
– *Storage: below 25°C –*

PHYTOMENADIONE = VITAMIN K1

Prescription under medical supervision

Therapeutic action

– Vitamin, anti-haemorrhagic

Indications

– Prophylaxis and treatment of haemorrhagic disease of the newborn

Presentation and route of administration

– 2 mg ampoule (10 mg/ml, 0.2 ml), for oral administration, IM or slow IV injection
– 10 mg ampoule (10 mg/ml, 1 ml), for oral administration, IM or slow IV injection

Dosage and duration

– *Prophylaxis of haemorrhagic disease of the newborn*

<table>
<tr><th></th><th>IM route</th><th>Oral route</th></tr>
<tr><td>Breastfed infants</td><td rowspan="2">One single dose the day of birth:
Child < 1.5 kg: 0.5 mg
Child > 1.5 kg: 1 mg</td><td>3 doses:
2 mg the day of birth
2 mg 4 to 7 days after birth
2 mg 4 weeks after birth</td></tr>
<tr><td>Formula fed infants</td><td>2 doses:
2 mg the day of birth
2 mg 4 to 7 days after birth</td></tr>
</table>

Prophylaxis by oral route is effective only if all the doses are administered. Therefore, use IM route in all newborn infants if treatment compliance cannot be guaranteed. Do not use oral route in newborns at high risk (preterm neonates, jaundice, neonatal diseases; newborns whose mother is treated with enzyme-inducing drugs).

– *Treatment of haemorrhagic disease of the newborn*
1 mg by IM or slow IV injection, to be repeated every 8 hours if necessary, depending on clinical evolution and coagulation tests results.

Contra-indications, adverse effects, precautions

– May cause: allergic reactions, especially by IV route, haematoma at IM injection site.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– To pregnant women taking enzyme-inducing drugs (rifampicin, phenobarbital, phenitoin, carbamazepine), administer 10 mg/day orally for the 15 days prior to the expected date of delivery. This maternal prevention does not change the need for IM prophylaxis in newborns at high risk.
– Phytomenadione is also used for the treatment of haemorrhage due to antivitamin K agents (warfarin). According to INR and severity of bleeding: in adults, 1 to 5 mg orally or 0.5 to 10 mg by slow IV route.
– Vitamin K has no direct or immediate haemostatic action: it is not indicated for traumatic haemorrhage.
– Do not dilute or mix with other drugs in the same syringe.
– *Storage: below 25°C –*

POTASSIUM CHLORIDE 10% = KCl 10%



Prescription under medical supervision

Therapeutic action

– Treatment of severe hypokalaemia (arrhythmia, marked muscular weakness, rhabdomyolysis or serum potassium level ≤ 2.5 mmol/litre)

Presentation and route of administration

– Ampoule containing 10% potassium chloride hypertonic solution (100 mg/ml, 10 ml), i.e. 1 g of potassium chloride (KCl) per 10 ml ampoule
– Ionic composition:
  • potassium (K^+): 13.4 mmol per 10 ml ampoule (*13.4 mEq*)
  • chloride (Cl^-): 13.4 mmol per 10 ml ampoule (*13.4 mEq*)
– *Check concentration before use*: potassium chloride also comes in ampoules containing 7.5%, 11.2%, 15% and 20% solutions.
– NEVER USE BY IV OR IM OR SC INJECTION. Potassium chloride must always be administered by slow IV infusion, diluted in 0.9% sodium chloride.
– For dilution:
  • The potassium concentration in the infusion fluid should not exceed 40 mmol/litre.
  • Mix thoroughly the potassium and the 0.9% sodium chloride solution by inverting at least 5 times the infusion bottle or bag.

Dosage and duration

Dosage depends on the severity of hypokalaemia and the patient's underlying condition. For information:

– Child over 1 month: 0.2 mmol/kg/hour for 3 hours
  Each mmol of potassium is diluted in 25 ml of 0.9% sodium chloride.
  Examples:

10 kg	0.2 (mmol) x 10 (kg) = 2 mmol/hour x 3 hours = 6 mmol 6 mmol (= 4.5 ml of 10% KCl solution) diluted in 150 ml of NaCl 0.9% and administered over 3 hours
15 kg	0.2 (mmol) x 15 (kg) = 3 mmol/hour x 3 hours = 9 mmol 9 mmol (= 6.5 ml of 10% KCl solution) diluted in 225 ml of NaCl 0.9% and administered over 3 hours

– Adult: 40 mmol (= 3 ampoules of 10 ml of 10% KCl) in one litre, to be administered over 4 hours. Do not exceed 10 mmol/hour.

The infusion may be repeated if severe symptoms persist or if the serum potassium level remains < 3 mmol/litre.

Contra-indications, adverse effects, precautions

– Administer with caution to elderly patients.
– Administer with caution and reduce the dose in patients with renal impairment (increased risk of hyperkalaemia).
– May cause:
  • in the event of rapid or excessive administration: hyperkalaemia, cardiac conduction and rhythm disorders, potentially fatal;
  • in the event of extravasation: necrosis.
– Infusion must be constantly monitored.

Remarks

– A 7.5% potassium solution contains 1 mmol of K^+/ml; a 11.2% solution contains 1.5 mmol of K^+/ml; a 15% solution contains 2 mmol of K^+/ml; a 20% solution contains 2.68 mmol of K^+/ml.
– Moderate hypokalaemia is defined as a potassium level < 3.5 mmol/litre; severe hypokalaemia as a potassium level ≤ 2.5 mmol/litre.
– *Storage: below 25°C*

PROMETHAZINE



Prescription under medical supervision

Therapeutic action

– Sedating antihistamine, anti-emetic

Indications

– Symptomatic treatment of allergic reactions, when oral administration is not possible
– Nausea and vomiting

Presentation and route of administration

– 50 mg in 2 ml ampoule (25 mg/ml) for IM injection

Dosage and duration

– *Allergic reactions*
  Child from 5 to 10 years: 6.25 to 12.5 mg as a single dose
  Child over 10 years and adult: 25 to 50 mg as a single dose
– *Nausea, vomiting*
  Child over 12 years and adult: 12.5 to 25 mg/injection, to be repeated every 4 to 6 hours if necessary (max. 100 mg/day)

Contra-indications, adverse effects, precautions

– Do not administer to patients with prostate disorders or closed-angle glaucoma and to children less than 2 years.
– Administer with caution and monitor use in patients > 60 years and in children (risk of agitation, excitability).
– May cause: drowsiness, anticholinergic effects (dry mouth, blurred vision, constipation, tachycardia, disorders of micturition), headache, tremor, allergic reactions.
– Monitor combination with CNS depressants (opioid analgesics, antipsychotics, sedatives, antidepressants, etc.) and drugs known to have anticholinergic effects (amitryptiline, atropine, chlorpromazine, clomipramine, etc.).
– *Pregnancy: avoid at the end of pregnancy; NO PROLONGED TREATMENT*
– *Breast-feeding: no contra-indication; monitor the child for excessive somnolence.*

Remarks

– *Storage: below 25°C –*

PROTAMINE

Prescription under medical supervision

Therapeutic action

- Neutralisation of the anticoagulant action of unfractionated heparin
- Partial neutralisation of the anticoagulant action of low molecular weight heparin

Indications

- Haemorrhagic syndromes resulting from accidental heparin overdosage

Presentation and route of administration

- 50 mg protamine sulfate in 5 ml ampoule (10 mg/ml) for slow IV injection

Concentration may be expressed in antiheparin units (AHU): 1000 AHU = 10 mg.

Dosage

Depends on the amount of heparin to be neutralised.

- *Heparin overdosage*
  If administered between 0 and 30 minutes after the heparin injection, 1 mg of protamine sulfate (100 AHU) neutralises 100 units of heparin.
  If more than 30 minutes have elapsed since the heparin injection, the dose of protamine to be given should be one half the dose of heparin injected.
  Do not administer more than 50 mg for any one dose.
- *Nadroparin overdosage*
  1 mg of protamine sulfate (100 AHU) neutralises 100 units of nadroparin. The dose of protamine to be given is equal to that of the nadroparin injected.

Duration

- According to clinical response. Monitor coagulation parameters.

Contra-indications, adverse effects, precautions

- May cause: hypotension, bradycardia and dyspnoea; allergic reactions, notably in diabetics treated by protamine-insulin.
- If excessive doses are used, haemorrhage may persist or reappear, as protamine sulfate itself has some anticoagulant activity.
- Administer by very slow IV (over 10 minutes) in order to reduce risks of hypotension and bradycardia.
- *Pregnancy: no contra-indication*
- *Breast-feeding: no contra-indication*

Remarks

- In the case of nadroparin overdose, it is recommended to administer 1 or 2 units of fresh whole blood at the same time to counteract its activity against Factor Xa.
- Anticoagulant effect of protamine may vary according to the origin of the heparin: follow manufacturer's recommendations.
- Protamine sulfate may be used to neutralize the effect of heparin before surgery.
- *Storage: to be kept refrigerated (2°C to 8°C)* –

QUININE



Prescription under medical supervision

Therapeutic action

– Antimalarial

Indications

– Treatment of severe falciparum malaria

Presentation and route of administration

– 600 mg of quinine dihydrochloride in 2 ml ampoule (300 mg/ml), to be diluted in 5% glucose, for slow infusion. NEVER FOR IV INJECTION.

Dosage

The dosage is expressed in terms of salt; it is the same for quinine dihydrochloride or for quinine formate:

– Child and adult:
  - loading dose: 20 mg/kg administered over 4 hours, then keep the vein open with an infusion of 5% glucose over 4 hours
  - maintenance dose: 8 hours after the start of the loading dose, 10 mg/kg every 8 hours (alternate quinine over 4 hours and 5% glucose over 4 hours)

For adults, administer each dose of quinine in 250 ml. For children under 20 kg, administer each dose of quinine in a volume of 10 ml/kg.

Do not administer a loading dose to patients who have received oral quinine, mefloquine or halofantrine within the previous 24 hours: start with maintenance dose.

Duration

– As soon as the patient is able to take oral treatment, administer either oral quinine to complete 7 days of treatment or an artemisinin-based combination (if patient developed neurological signs during the acute phase, do not use the combination artesunate-mefloquine).

Contra-indications, adverse effects, precautions

– May cause: hypoglycaemia; auditory and visual disturbances, cardiac disorders (especially in the event of overdose), hypersensitivity reactions, cardiac depression if injected undiluted by direct IV route.
– In patients with acute renal failure, reduce the dose by one-third if the parenteral treatment lasts more than 48 hours.
– Monitor blood glucose (reagent strip test).
– Do not combine with chloroquine or halofantrine.
– Do not administer simultaneously with mefloquine (risk of seizures, cardiac toxicity). Administer mefloquine 12 hours after the last dose of quinine.
– *Pregnancy: no contra-indication. The risk of quinine-related hypoglycaemia is very high in pregnant women.*
– *Breast-feeding: no contra-indication*

Remarks

– 10 mg quinine dihydrochloride = 8 mg quinine base.
– Administration by IM deep injection (into the anterior thigh only) is possible when infusion cannot be performed (e.g. before transferring a patient). However this may cause numerous complications. Doses are the same as for the IV route. Quinine should be diluted (1/2 or 1/5). For the loading dose, administer half the dose into each thigh.
– *Storage: below 25°C –*

SALBUTAMOL = ALBUTEROL

Prescription under medical supervision

2

Therapeutic action

– Uterine relaxant

Indications

– Threatened premature labour (preferably use nifedipine for this indication)

Presentation and route of administration

– 0.5 mg in 1 ml ampoule (0.5 mg/ml) for IV infusion

Dosage

– Dilute 5 mg (10 ampoules of 0.5 mg) in 500 ml of 5% glucose or 0.9% sodium chloride to obtain a solution of 10 micrograms/ml.
  Start infusion at the rate of 15 to 20 micrograms/minute (30 to 40 drops/minute).
  If contractions persist, increase the rate by 10 to 20 drops/minute every 30 minutes until uterine contractions cease. Do not exceed 45 micrograms/minute (90 drops/minute). Continue for one hour after contractions have ceased, then reduce the rate by half every 6 hours.

Duration

– 48 hours maximum

Contra-indications, adverse effects, precautions

– Do not administer to patients with pre-eclampsia, eclampsia, uterine haemorrhage, intra- uterine infection, intra-uterine foetal death, placenta praevia, placental abruption, rupture of membranes, multiple pregnancy, severe cardiopathy.
– Administer with caution to patients with diabetes, hyperthyroidism.
– Do not combine with nifedipine.
– May cause: pulmonary oedema, myocardial ischemia, foetal and maternal tachycardia, hypotension, tremor, headache, hypokalaemia, hyperglycaemia.
– Monitor maternal pulse regularly. Reduce the infusion rate in the event of maternal tachycardia (> 120/minute).
– *<u>Pregnancy</u>: no contra-indication*
– *<u>Breast-feeding</u>: avoid*

Remarks

– Use salbutamol within 24 hours of mixing with infusion fluid.
– Do not mix with other drugs in the same infusion fluid.
– Also comes in 5 ml ampoule containing 0.25 mg (0.05 mg/ml).
– *<u>Storage</u>: below 25°C –*

SODIUM BICARBONATE 8.4%

Prescription under medical supervision

Therapeutic action

– Severe metabolic acidosis

Presentation

– 10 ml or 20 ml ampoule

Composition

Sodium bicarbonate: 8.4 g per 100 ml
– Hypertonic solution
– Ionic composition: sodium (Na^+): 10 mmol (*10 mEq*) per 10 ml ampoule
bicarbonate: 10 mmol (*10 mEq*) per 10 ml ampoule

Contra-indications, adverse effects, precautions

– Do not use in case of alkalosis or respiratory acidosis.
– Do not administer hypertonic solutions by IM or SC route. Administer under close medical supervision, by slow direct IV injection diluted in 5% glucose or by continuous infusion in 5% glucose.
– Do not add: penicillins, chloramphenicol, aspirin, atropine, calcium, insulin, vitamins, etc. to sodium bicarbonate solution.

Remarks

– Contains a high concentration of bicarbonate and sodium ions. Its use is rarely justified in case of metabolic acidosis caused by dehydration. Inaccurate administration may induce hypernatraemia and hypokalaemia.
– *Storage: below 25°C*

SPECTINOMYCIN

Prescription under medical supervision

Cephalosporins are the first choice treatment of gonococcal infections. Spectinomycin may be used as an alternative, when cephalosporins are not available or are contraindicated.

Therapeutic action

– Antibacterial (group of aminoglycosides)

Indications

– Second choice treatment of gonococcal infections

Presentation and route of administration

– Powder for injection in 2 g vial, to be dissolved with the diluent supplied by the manufacturer (3.2 ml ampoule of water for injection with benzyl alcohol), for IM injection

Dosage and duration

– *Anogenital gonococcal infection and gonococcal conjunctivitis*
  Adult: 2 g as a single dose (a dose of 4 g may be required, divided between two sites)

– *Disseminated gonococcal infection*
  Adult: 4 g/day in 2 divided doses for 7 days

Contra-indications, adverse effects, precautions

– May cause: nausea, dizziness, fever and chills, urticaria; pain at injection site.
– *Pregnancy*: ***CONTRA-INDICATED*** *(safety is not established)*
– *Breast-feeding: no contra-indication for a single dose treatment*

Remarks

– Administer a concurrent anti-chlamydia treatment to patients with gonococcal infections (co-infections are frequent).
– Spectinomycin is poorly effective against pharyngeal gonococcal infections.
– For the treatment of neonatal gonococcal conjunctivitis, use cephalosporins.
– Shake well prior to withdrawal medication and use a 19-gauge needle.
– Do not mix with other drugs in the same syringe.
– *Storage: below 25°C*

STREPTOMYCIN = S

Prescription under medical supervision

Therapeutic action

– Antibacterial with bactericidal activity (group of aminoglycosides)

Indications

– Tuberculosis, in combination with other antituberculous antibacterials

Presentation and route of administration

– Powder for injection, vial containing 1 g of streptomycin base, to be dissolved in 5 ml of water for injection, for IM injection. DO NOT ADMINISTER BY IV INJECTION.

Dosage

– Child over 30 kg and adult: 15 mg/kg (12 to 18 mg/kg/day) once daily; maximum 1 g/day

Weight	1 g vial to be dissolved in 5 ml (200 mg/ml)	
	Dose in mg	Dose in ml
30 to 33 kg	500 mg	2.5 ml
34 to 40 kg	600 mg	3 ml
41 to 45 kg	700 mg	3.5 ml
46 to 50 kg	800 mg	4 ml
51 to 70 kg	900 mg	4.5 ml
> 70 kg	1000 mg	5 ml

Duration

– According to protocol

Contra-indications, adverse effects, precautions

– Do not administer to patients with hypersensitivity to aminoglycosides.
– Administer with caution to patients with pre-existing renal, vestibular or auditory problems.
– Reduce the dose in patients with renal impairment (12 to 15 mg/kg/injection 2 or 3 times per week).
– Reduce the dose to 500-750 mg/day in patients over 60 years.
– May cause: vestibular and auditory damage, renal impairment, electrolyte imbalance and hypersensitivity reactions.
– Stop treatment in the event of dizziness, persistent giddiness, tinnitus or hearing defects.
– *Pregnancy*: ***CONTRA-INDICATED***
– *Breast-feeding: no contra-indication*

Remarks

– Streptomycin is included in the WHO Group 2 antituberculous agents.
– Streptomycin is also used in the treatment of:
  • Brucellosis: 15 mg/kg once daily in children and 1 g once daily in adults, for 2 weeks, in combination with doxycycline for 6 weeks.
  • Plague: 30 mg/kg/day in children and 2 g/day in adults, divided into 2 injections given at 12 hour-intervals, for 10 days.
– Storage: below 25°C –
  Reconstituted solution can be kept 24 hours maximum, below 25°C and protected from light.

SURAMIN



Prescription under medical supervision

2

Therapeutic action

– Trypanocide

Indications

– Haemolymphatic stage of African trypanosomiasis due to *T. b. rhodesiense*

Presentation and route of administration

– Powder for injection in 1 g vial, to be dissolved in 10 ml of water for injection to obtain a 10% solution, for slow IV injection (or slow infusion in 500 ml of 0.9% NaCl). NEVER BY IM OR SC INJECTION.

Dosage and duration

– Patients must be treated in hospital, under close medical supervision.
– Child and adult: 4 to 5 mg/kg by slow IV at D1 (test dose) then, in the absence of reaction after the test dose, 20 mg/kg by slow IV at D3, D10, D17, D24 and D31 (max. 1 g/injection)

Contra-indications, adverse effects, precautions

– Do not administer in patients with severe renal or hepatic disease.
– May cause:
  • anaphylactic reaction: administer a test dose before starting treatment. In the event of anaphylactic reaction, the patient should never receive suramin again;
  • proteinuria (renal toxicity), diarrhoea, haematological disorders (haemolytic anaemia, agranulocytosis, etc.), eye disorders (photophobia, lachrymation), neurological disorders (paraesthesia, hyperaesthesia of the palms and soles, polyneuropathy), high fever, skin eruption, malaise, intense thirst, polyuria;
  • local inflammation and necrosis when administered by IM or SC injection.
– Before each injection, check for proteinuria: moderate proteinuria is common at the start of treatment, heavy proteinuria calls for dose reduction and modification of treatment schedule; in the event of persisting heavy proteinuria, treatment should be discontinued.
– Ensure that the patient is well hydrated.
– *Pregnancy: although suramin is toxic, it is recommended to treat pregnant women with rhodesiense trypanosomiasis at the haemolymphatic stage. Suramin is also used at the meningoencephalitic stage until the woman can be given melarsoprol after delivery, as melarsoprol is contra-indicated during pregnancy.*

Remarks

– Suramin is not administered at the meningoencephalitic stage (except in pregnant women) as it poorly penetrates into the cerebrospinal fluid.
– Due to its toxicity, suramin is no longer used for the treatment of onchocerciasis.
– *Storage:*

THIAMINE = VITAMIN B1

Prescription under medical supervision

Therapeutic action

– Vitamin

Indications

– Initial treatment of severe thiamine deficiency: severe acute forms of beriberi, neurological complications of chronic alcoholism (severe polyneuritis, Wernicke's encephalopathy, Korsakoff syndrome)

Presentation and route of administration

– 100 mg thiamine hydrochloride in 2 ml ampoule (50 mg/ml) for IM or very slow IV injection

Dosage and duration

– *Infantile beriberi*
  25 mg by IV injection then, 25 mg by IM injection once or twice daily then, change to oral route (10 mg/day) as soon as symptoms have improved.
– *Acute beriberi*
  50 mg as a single IM injection then change to oral treatment (150 mg/day in 3 divided doses until symptoms improve then, 10 mg once daily)
  or, depending on severity, 150 mg/day in 3 IM injections for a few days then change to oral route (10 mg/day).
– *Wernicke's encephalopathy, Korsakoff syndrome*
  250 mg once daily by IV injection until the patient can take oral treatment. Higher initial doses may be required during the first 12 hours.

Contra-indications, adverse effects, precautions

– May cause: hypotension; anaphylactic reaction, especially when injected IV (inject very slowly over 30 minutes).
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Thiamine is also called aneurine.
– Injectable thiamine is not included in the WHO list of essential medicines.
– *Storage:*

TRAMADOL



Prescription under medical supervision

Therapeutic action
– Centrally acting analgesic (weak opioid, serotonin-norepinephrine reuptake inhibitor)

Indications
– Moderate acute pain

Presentation and route of administration
– 100 mg ampoule (50 mg/ml, 2 ml) for SC, IM, slow IV injection or infusion

Dosage
– Child over 6 months: 2 mg/kg/injection every 6 hours
– Adult: 50 to 100 mg/injection every 4 to 6 hours, without exceeding 600 mg/day

Duration
– Change to oral route as soon as possible.

Contra-indications, adverse effects, precautions
– Do not administer in the event of severe respiratory depression and to patients that risk seizures (e.g. epilepsy, head injury, meningitis).
– May cause:
  • dizziness, nausea, vomiting, drowsiness, dry mouth, sweating;
  • rarely: allergic reactions, seizures, confusion;
  • exceptionally: withdrawal symptoms; respiratory depression in the event of overdosage.
– Do not combine with opioid analgesics, including codeine.
– Avoid combination with carbamazepine, fluoxetine, chlorpromazine, promethazine, clomipramine, haloperidol, digoxin.
– Reduce doses (1 mg/kg) and administer every 12 hours in elderly patients and in patients with severe renal or hepatic impairment (risk of accumulation).
– For IV administration, it is better to use tramadol by infusion over 20-30 minutes rather than by IV injection, in order to limit adverse effects.
– *Pregnancy and breast-feeding: no contra-indication. The child may develop adverse effects (drowsiness) when the mother receives tramadol at the end of the 3rd trimester and during breast-feeding. In these events, administer with caution, for a short period, at the lowest effective dose, and monitor the child.*

Remarks
– Tramadol is approximately 10 times less potent than morphine.
– In some countries, tramadol is on the list of narcotics: follow national regulations.
– *Storage: below 25°C –*

Infusion fluids

Use of infusion fluids

Choice of infusion fluids according to indications

3 kinds of infusion fluids should be available:

– For IV rehydration: Ringer Lactate is the most suitable.

– For administration of IV drugs: 5% glucose solution and 0.9% sodium chloride solution are the most suitable.

– For volume expansion: see table next page.

Precautions for the use of infusion fluids

– Carefully read the labels on the infusion bottle to avoid mistakes.

– Indicate on the label any drugs added to the infusion as well as the patient's name and/or bed number.

– If drugs are added to the intravenous fluid, think of the risks of:
  • physical and chemical incompatibilities,
  • microbial contamination: aseptic technique.

– Examine each bottle against the light to check clearness. Discard any bottles that show particles in suspension or cloudiness.

Volume expanders

	Duration*	Volumer	Dosage	Indications	Contra-indications	Advantages	Disadvantages
Cristalloids Ringer Lactate NaCl 0.9%	1 to 2 hours	3 times the estimated fluid loss	According to patient's condition	• Hypovolaemia • Prevention of hypotension induced by spinal anaesthesia	• None	• Free from adverse effects • Inexpensive	• Large amounts to be infused rapidly • Expansion of short duration
Colloids Polygeline Modified fluid gelatin	2 to 3 hours	1 to 1.5 times the estimated fluid loss	According to patient's condition	• Hypovolaemia	• Allergy to gelatins	• Relatively good volume expansion	• Allergic reactions • Expansion of short duration • Expensive

* Length of time during which the fluid remains in the intravascular compartment after infusion.

For more information, refer to relevant fact-sheet.

GLUCOSE 5% = DEXTROSE 5%

Indications

– Vehicle for the administration of parenteral drugs

Presentation

– 500 ml and 1000 ml bottles or bags

Composition

– 5% isotonic glucose solution (50 mg of glucose/ml) for infusion

Contra-indications, adverse effects, precautions

– Do not use glucose solution for the administration of hydralazine (incompatibility, rapid degradation of hydralazine): use only 0.9% sodium chloride or Ringer Lactate solution.
– Other drugs such as amoxicillin + clavulanic acid, aciclovir, phenytoin, bleomycin or chloroquine must also be administered in 0.9% sodium chloride solution.
– Amoxicillin diluted in 5% glucose must be administered in less than one hour. If infusion over more than one hour is required, use 0.9% sodium chloride.

Remarks

– This solution does not contain electrolytes or lactate. Its use is not recommended for the IV treatment of dehydration. Use Ringer Lactate or 0.9% sodium chloride solutions.
– Low nutritional value: 200 kcal/litre.
– *Storage: below 25°C*

GLUCOSE 10% = DEXTROSE 10%

Prescription under medical supervision

Indications

– Emergency treatment of severe hypoglycaemia

Presentation

– 250 ml and 500 ml bottles or bags

Composition

– 10% hypertonic glucose solution (100 mg of glucose/ml) for slow IV injection or infusion

Dosage and duration

– *Severe hypoglycaemia*
  Child and adult: 5 ml/kg by very slow IV injection (over 5 minutes) or IV infusion
  Check blood glucose level 30 minutes after injection. If blood glucose level is still < 3 mmol/l or < 55 mg/dl, administer a second dose or give oral glucose, according to the patient clinical condition.
– *Neonatal hypoglycaemia*
  5 ml/kg/hour by IV infusion
  In the event of loss of consciousness or seizures, give in addition a loading dose of 2.5 ml/kg by very slow IV infection (over 5 minutes).

Contra-indications, adverse effects, precautions

– Do not administer by IM or SC route.

Remarks

– If ready-made 10% glucose solution is not available: add 10 ml of 50% glucose solution per 100 ml of 5% glucose solution to obtain a 10% glucose solution.
– 10% glucose solution may be used as vehicle for administration of the loading dose of IV quinine in order to prevent hypoglycaemia. The following doses are administered in 5% glucose solution.
– Nutritional value: 400 kcal/litre.
– *<u>Storage</u>: below 25°C*

MODIFIED FLUID GELATIN (Plasmion®...)
POLYGELINE (Haemaccel®...)

Prescription under medical supervision

Therapeutic action

– Colloidal plasma substitute

Indications

– Fluid replacement in hypovolaemic shock (haemorrhagic shock, septic shock)

Presentation

– 500 ml plastic bottle or bag

Composition

– Varies according to the manufacturer.
  Example:

	Plasmion®	Haemaccel®
Modified fluid gelatin	30 g/litre	–
Polygeline	–	35 g/litre
Sodium (Na^+)	150 mmol (*150 mEq*)	145 mmol (*145 mEq*)
Potassium (K^+)	5 mmol (*5 mEq*)	5.10 mmol (*5.10 mEq*)
Calcium (Ca^{++})	–	6.25 mmol (*12.50 mEq*)
Chloride (Cl^-)	100 mmol (*100 mEq*)	145 mmol (*145 mEq*)
Magnesium (Mg^{++})	1.5 mmol (*3 mEq*)	–
Lactate	30 mmol (*30 mEq*)	–

Dosage

– Adjust dosage according to the patient's haemodynamic status.
– In the event of haemorrhage, replace the lost volume by the same volume of plasma substitute.

Contra-indications, adverse effects, precautions

– May cause: allergic reactions, possibly severe (anaphylactic shock).
– *Pregnancy*: ***CONTRA-INDICATED***: *risk of maternal anaphylactic reaction with serious consequences for the foetus. Use Ringer lactate.*

Remarks

– Do not add any drugs to the bottle.
– When plasma substitutes are not available, use Ringer lactate (giving 3 times the lost blood volume).
– *Storage: below 25°C*

RINGER LACTATE

Indications

– Severe dehydration
– Hypovolaemia (trauma, surgery, anaesthesia...)

Presentation

– 500 ml and 1000 ml bottles or bags

Composition

– Varies with manufacturer.
– Most frequent ionic composition per litre:

sodium (Na^+)	130.50 mmol	(*130.50 mEq*)
potassium (K^+)	4.02 mmol	(*4.02 mEq*)
calcium (Ca^{++})	0.67 mmol	(*1.35 mEq*)
chloride (Cl^-)	109.60 mmol	(*109.60 mEq*)
lactate	28.00 mmol	(*28.00 mEq*)

– Isotonic solution. Does not contain glucose.

Contra-indications, adverse effects, precautions

– In cases of metabolic alkalosis, diabetes, severe hepatic failure, head injury: isotonic solution of NaCl 0.9% is preferred.
– Ringer Lactate provides appropriate amounts of sodium and calcium. It contains lactate which is converted to bicarbonate for correction of metabolic acidosis when it exists (if haemodynamic and liver function are normal).
Warning, some commercially available solutions do not contain lactate.
– It contains 4 mEq of potassium/litre, which is sufficient for short-term use. For prolonged use (after 2 to 3 days), addition of potassium chloride is necessary: 1 or 2 g per litre = one to two 10 ml ampoules of KCL 10%/litre.
– For moderate and mild dehydration, administer oral rehydration salts (ORS).

Remarks

– For correction of hypovolaemia due to haemorrhage; administer 3 times the lost volume only if:
  • blood loss does not exceed 1500 ml in adults;
  • cardiac and renal function are not impaired.
– May be used to prevent hypotension induced by spinal anaesthesia.
– *Storage: below 25°C*

SODIUM CHLORIDE 0.9% = NaCl

Indications

– Vehicle for the administration of parenteral drugs
– Fluid replacement

Presentation

– 100 ml, 250 ml, 500 ml and 1000 ml bottles or bags

Composition

– Isotonic solution of sodium chloride (0.9 g per 100 ml) for infusion
– Ionic composition:

sodium (Na^+)	150 mmol (*150 mEq*) per litre
chloride (Cl^-)	150 mmol (*150 mEq*) per litre

Contra-indications, adverse effects, precautions

– Use with caution in patients with hypertension, heart failure, oedema, ascites due to cirrhosis, renal impairment and other conditions associated with sodium retention.
– May cause: pulmonary oedema in the event of too rapid infusion or infusion of excessive amounts.
– Do not use as vehicle for the administration of amphotericin B (incompatibility): use only 5% glucose solution.

Remarks

– For correction of hypovolaemia due to haemorrhage, administer 3 times the lost volume only if:
  • blood loss does not exceed 1500 ml in adults;
  • cardiac and renal function are not impaired.
– 0.9% sodium chloride solution may be used to prevent hypotension induced by spinal anaesthesia.
– This solution contains neither potassium nor lactate. In case of severe dehydration, use Ringer Lactate. If Ringer Lactate is not available, add KCl (2 g/l) + NaCl (4 g/l) to 5% glucose.
– For external use: sterile 0.9% sodium chloride solution is used for cleansing of non-infected wounds, wound irrigation, eye cleansing (conjunctivitis, eye irrigations), nasal lavage in the event of obstruction, etc.
– *Storage: below 25°C*

Vaccines, immunoglobulins and antisera

Antituberculous vaccine (BCG)

Diphtheria-tetanus-pertussis vaccine (DTP)

Hepatitis B vaccine

Japanese encephalitis vaccine

Measles vaccine

Meningococcal vaccine A+C

Meningococcal vaccine A+C+W135

Oral antipoliomyelitis vaccine (OPV)

Oral cholera vaccine O1 and O139

Rabies vaccine

Human rabies immunoglobulin (HRIG)

Human tetanus immunoglobulin (HTIG)

Tetanus vaccine (TT)

Tetanus antitoxin (equine)

Yellow fever vaccine

ANTITUBERCULOUS VACCINE = BCG VACCINE

Indications

– Prevention of tuberculosis

Composition, presentation and route of administration

– Live attenuated bacterial vaccine
– Powder for injection in multidose vial, to be dissolved with the entire vial of the diluent supplied by the manufacturer, for intradermal injection into the external face of the left upper arm

Dosage and vaccination schedule

– Child: 0.05 ml as a single dose as soon after birth as possible
– If child is over one year old: 0.1 ml as a single dose

Contra-indications, adverse effects, precautions

– Do not administer to patients with immunodeficiency (symptomatic HIV infection, immunosuppressive therapy, etc.) and malignant haemopathy.
– Vaccination should be postponed in the event of evolutive extensive dermatosis, acute complicated malnutrition (vaccine should be given just before the child is discharged from the nutrition centre) and severe acute febrile illness (minor infections are not contraindications).
– May cause:
  • normal local reaction 2 to 4 weeks after injection: papule which changes to an ulcer, that usually heals spontaneously (dry dressing only), leaving a permanent scar;
  • occasionally: persistent ulcer with serous discharge up to 4 months after injection, non-suppurative adenitis, keloid formation, abscess at the injection site;
  • exceptionally: suppurative lymphadenitis, osteitis.
– Clean the injection site with boiled and cooled water and allow drying. Do not use antiseptics (risk of inactivation of live vaccine).
– Do not mix with other vaccines in the same syringe (inactivation of vaccines).
– If administered simultaneously with EPI vaccines, use different syringes and injection sites.
– *Pregnancy*: ***CONTRA-INDICATED***
– *Breast-feeding*: *no contra-indication*

Remarks

– Inject the vaccine in the same place for each child to make it easy to find the BCG scar subsequently.
– If the injection is correctly performed an “orange-skin” papule, measuring 5-8 mm in diameter, should appear at the injection site.
– Duration of protection is not known, and decreases over time.
– *Storage*:
  • *Powder: between 2°C and 8°C. Freezing is possible but unnecessary.*
  • *Diluent: a cold chain is not required for storage. However, at least 12 hours before reconstitution of the vaccine, the diluent must be refrigerated between 2°C and 8°C so that the diluent and lyophilised powder are at the same temperature: a temperature difference during reconstitution may reduce vaccine efficacy. Do not freeze.*
  • *Reconstituted vaccine: between 2°C and 8°C for 4 hours maximum.*

DIPHTHERIA-TETANUS-PERTUSSIS VACCINE (DTP)

Indications

– Prevention of diphtheria, tetanus and pertussis in children under 7 years (primary vaccination)

Composition, presentation and route of administration

– Trivalent vaccine combining diphtheria toxin, tetanus toxin and whole-cell (DTwP) or acellular (DTaP) pertussis vaccine
– Suspension for injection in multidose vial, for IM injection into the anterolateral part of the thigh

Dosage and vaccination schedule

– Child: 0.5 ml/injection
– 3 injections in infancy (age < 1 year), with an interval of 4 weeks between each injection. It is recommended to administer the 1st dose at 6 weeks of age, the 2nd dose at 10 weeks of age and the 3rd dose at 14 weeks of age. If a child has not been vaccinated at 6 weeks of age, start vaccination as soon as possible.
– For booster doses, use DTP or DT or Td vaccine, depending on age.

Contra-indications, adverse effects, precautions

– Do not administer in the event of significant reactions to a previous dose of DTP vaccine or evolving neurological disease (encephalopathy, uncontrolled epilepsy): in both cases, use DT vaccine.
– Vaccination should be postponed in the event of severe acute febrile illness (minor infections are not contra-indications).
– Do not administer into the gluteal region.
– May cause:
  • mild reactions at the injection site: swelling, redness and pain;
  • general reactions: fever within 24 hours after injection;
  • rarely: anaphylactic reactions, seizures.
– Respect an interval of 4 weeks between each dose.
– Shake before use to homogenise the vaccine.
– Do not mix with other vaccines in the same syringe (inactivation of vaccines).
– If administered simultaneously with EPI vaccines, use different syringes and injection sites.

Remarks

– If the vaccination is interrupted before the complete series has been administered, it is not necessary to start again from the beginning. Continue the vaccination schedule from where it was interrupted and complete the series as normal.
– There are two bivalent vaccines containing diphtheria and tetanus toxins:
  • *diphtheria-tetanus vaccine (DT)*, used for children < 7 years for booster doses, or when pertussis vaccine is contra-indicated, or after a significant reaction to a previous dose of DTP;
  • *tetanus-diphtheria vaccine* with low dose diphtheria toxoid (*Td*), used for primary vaccination and booster doses in children ≥ 7 years, adolescents and adults.
– There is also a quadrivalent vaccine against diphtheria, tetanus, pertussis and hepatitis B.
– There is also a pentavalent vaccine against diphtheria, tetanus, pertussis, hepatitis B and *Haemophilus influenzae*.
– *Storage: between 2°C and 8°C. Do not freeze –*

HEPATITIS B VACCINE

Indications

– Prevention of hepatitis B

Composition, presentation and route of administration

– There are 2 types of vaccines: recombinant vaccines and human plasma-derived vaccines.
– Solution for injection, in single-dose syringe or multidose vial, for IM injection into the deltoid muscle (into the anterolateral part of the thigh in children under 2 years)

Dosage and vaccination schedule

Dosage varies according to age and type of vaccine used: follow manufacturer's instructions.

– *Standard schedule*
  • Newborns and infants:
  In countries where perinatal infection is common: one injection after birth, then at 6 and 14 weeks
  Where perinatal infection is less common: one injection at 6, 10 and 14 weeks
  • Children, adolescents, adults:
  Schedule 0-1-6: 2 injections 4 weeks apart, then a 3rd injection 5 months after the 2nd injection
– *Accelerated schedules, when rapid protection is required (imminent departure in highly endemic areas, post-exposure prophylaxis)*
  • Schedule D0-D7-D21: 3 injections administered during the same month, then a 4th injection one year after the 1st injection
  • Schedule 0-1-2-12: 3 injections 4 weeks apart, then a 4th injection one year after the 1st injection

Contra-indications, adverse effects, precautions

– Do not administer to patients with hypersensitivity to any component of the vaccine, or history of an allergic reaction to a previous injection. Vaccination should be postponed in the event of severe acute febrile illness (minor infections are not contra-indications).
– Do not administer into the gluteal region (diminished antibody response to vaccine).
– In patients with multiple sclerosis, assess the benefit-risk balance of vaccination.
– May cause:
  • minor local or general reactions (pain or redness at injection site, fever, headache, myalgia, etc.);
  • very rarely: anaphylactic reaction, serum disease, lymphadenopathy, peripheral neuropathy.
– Shake before use to homogenise the vaccine.
– Do not mix with other vaccines in the same syringe (inactivation of vaccines).
– If administered simultaneously with EPI vaccines, use different syringes and injection sites.
– *Pregnancy: only administer if there is a high risk of contamination.*
– *Breast-feeding: no contra-indication*

Remarks

– Immunity develops 1 to 2 months after the 3rd injection. Vaccine efficacy is > 80%.
– If the vaccination schedule is interrupted before the complete series has been administered, it is not necessary to start again from the beginning. Continue the vaccination schedule from where it was interrupted and complete the series as normal.
– SC route may be used, only if IM route is contra-indicated.
– *Storage: between 2°C and 8°C. Do not freeze –*

JAPANESE ENCEPHALITIS VACCINE

Indications

- Prevention of Japanese encephalitis:
  - in children from 1 year and adults in endemic countries (rural areas of Southeast and Southwest Asia and Western Pacific countries)
  - in travellers spending more than 1 month in endemic countries, in rural areas and during the wet season

Composition, presentation and route of administration

- Inactivated virus vaccine
- Powder for injection in single-dose vial, to be dissolved with the entire vial of the diluent supplied by the manufacturer, for SC injection

Dosage and vaccination schedule

- Child from 1 to 3 years: 0.5 ml/injection
- Child over 3 years and adult: 1 ml/injection

There are several vaccination schedules. For information, for travellers:
3 injections on Day 0, Day 7 and Day 28; a booster dose every 3 years if risk persists.

An accelerated schedule is possible (3 doses on Day 0, Day 7 and Day 14) but this is likely to result in lower antibody levels than the standard schedule.
The 3rd dose should be given at least 10 days before departure to ensure an adequate immune response and access to medical care in the event of adverse reactions.

Contra-indications, adverse effects, precautions

- Do not administer to patients with history of an allergic reaction to a previous injection of Japanese encephalitis vaccine.
- Vaccination should be postponed in the event of severe acute febrile illness (minor infections are not contra-indications).
- May cause:
  - redness and swelling at the injection site;
  - fever, headache, chills, asthenia;
  - hypersensitivity reactions (urticaria, angioedema), immediate or delayed (up to 2 weeks after injection);
  - rarely: encephalitis, encephalopathy.
- Do not mix with other vaccines in the same syringe (inactivation of vaccines).
- If administered simultaneously with EPI vaccines, use different syringes and injection sites.
- <u>Pregnancy</u>: *only administer if there is a high risk of contamination.*
- <u>Breast-feeding</u>: *no contra-indication*

Remarks

- Protection lasts at least 2 years after 3 doses.
- Caution: there are different vaccines against EJ, with different dosages and administration schedules (e.g. suspension for injection in pre-filled syringe, administered in 2 doses (0.5 ml on D0 and D28) in adults, by IM route). For each vaccine, follow manufacturer's instructions.
- <u>Storage</u>:
  - *Powder: between 2°C and 8°C. Do not freeze.*
  - *Diluent: a cold chain is not required for storage. However, at least 12 hours before reconstitution of the vaccine, the diluent must be refrigerated between 2°C and 8°C so that the diluent and lyophilised powder are at the same temperature: a temperature difference during reconstitution may reduce vaccine efficacy. Do not freeze.*
  - *Reconstituted vaccine: between 2°C and 8°C, for 6 hours maximum.*

MEASLES VACCINE

Indications

– Prevention of measles

Composition, presentation and route of administration

– Live-attenuated virus vaccine, derived from different viral strains (Schwarz, Edmonston, CAM70, Moraten, etc.)
– Powder for injection in single multidose vial, to be dissolved with the diluent supplied by the manufacturer, for IM or SC injection into the anterolateral part of the thigh or into the deltoid muscle

Dosage and vaccination schedule

– In the EPI: one dose of 0.5 ml in children from 9 months of age.
– In situations where there is high risk of infection (overcrowding, epidemics, malnutrition, infants born to a mother with HIV infection, etc.), administer one dose from 6 months of age and one dose from 9 months of age (respect an interval of at least 4 weeks between two injections).
– The measles control programme recommends the administration of a 2nd dose though catch-up immunization campaigns to reach unvaccinated children or children who did not respond to primary vaccination. Check national recommendations.

Contra-indications, adverse effects, precautions

– Do not administer to patients with severe immune depression or history of an allergic reaction to a previous injection of measles vaccine.
– Vaccination should be postponed in the event of severe acute febrile illness (minor infections are not contra-indications).
– May cause:
  • fever, skin rash, coryza;
  • exceptionally: seizures, encephalitis.
– Do not mix with other vaccines in the same syringe (inactivation of vaccines).
– If administered simultaneously with EPI vaccines, use different syringes and injection sites.
– *Pregnancy and breast-feeding: this vaccination is usually not indicated in adults.*

Remarks

– Immunity develops 10 to 14 days after injection, and lasts for at least 10 years (when administered at 9 months).
– *Storage*:
  • *Powder: between 2°C and 8°C.*
  • *Diluent: a cold chain is not required for storage. However, at least 12 hours before reconstitution of the vaccine, the diluent must be refrigerated between 2°C and 8°C so that the diluent and lyophilised powder are at the same temperature: a temperature difference during reconstitution may reduce vaccine efficacy. Do not freeze.*
  • *Reconstituted vaccine: between 2°C and 8°C for 6 hours maximum.*

MENINGOCOCCAL VACCINE A+C

Indications

– Prevention of meningitis due to meningococci groups A and C:
  • in mass immunisation campaigns in the event of an outbreak due to meningococcus A or C
  • in travellers spending more than 1 month in hyperendemic areas

Composition, presentation and route of administration

– Inactivated bacterial vaccine, polysaccharide
– Powder for injection in monodose or multidose vial, to be dissolved with the entire vial of the diluent supplied by the manufacturer, for deep SC or IM injection, into the deltoid muscle or the anterolateral part of the thigh in children (follow manufacturer's instructions)

Dosage and vaccination schedule

– Child from 2 years and adult: 0.5 ml as a single dose

Contra-indications, adverse effects, precautions

– Do not administer to patients with history of an allergic reaction to a previous injection of meningococcal vaccine.
– Vaccination should be postponed in the event of severe acute febrile illness (minor infections are not contra-indications).
– May cause: mild local reaction, mild fever.
– Do not mix with other vaccines in the same syringe (inactivation of vaccines).
– If administered simultaneously with EPI vaccines, use different syringes and injection sites.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Immunity develops 7 to 10 days after injection, and lasts for approximately 3 years.
– *Storage:*
  • *Powder: between 2°C and 8°C.*
  • *Diluent: a cold chain is not required for storage. However, at least 12 hours before reconstitution of the vaccine, the diluent must be refrigerated between 2°C and 8°C so that the diluent and lyophilised powder are at the same temperature: a temperature difference during reconstitution may reduce vaccine efficacy. Do not freeze.*
  • *Reconstituted vaccine: between 2°C and 8°C, for 6 hours maximum.*

MENINGOCOCCAL VACCINE A+C+W135

Indications

– Prevention of meningitis due to meningococci groups A, C and W135:
  - in mass immunisation campaigns in the event of an outbreak due to meningococcus A, C or W135
  - in travellers spending more than 1 month in hyperendemic areas

Composition, presentation and route of administration

– Inactivated bacterial vaccine, polysaccharide
– Powder for injection in multidose vial, to be dissolved with the entire vial of the diluent supplied by the manufacturer, for SC injection only

Dosage and vaccination schedule

– Child from 2 years and adult: 0.5 ml as a single dose

Contra-indications, adverse effects, precautions

– Do not administer to patients with history of an allergic reaction to a previous injection of meningococcal vaccine.
– Vaccination should be postponed in the event of severe acute febrile illness (minor infections are not contra-indications).
– May cause: mild local reaction, mild fever.
– Do not mix with other vaccines in the same syringe (inactivation of vaccines).
– If administered simultaneously with EPI vaccines, use different syringes and injection sites.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Immunity develops 7 to 10 days after injection, and lasts for approximately 3 years.
– *Storage:*
  - *Powder: between 2°C and 8°C.*
  - *Diluent: a cold chain is not required for storage. However, at least 12 hours before reconstitution of the vaccine, the diluent must be refrigerated between 2°C and 8°C so that the diluent and lyophilised powder are at the same temperature: a temperature difference during reconstitution may reduce vaccine efficacy. Do not freeze.*
  - *Reconstituted vaccine: between 2°C and 8°C, for 6 hours maximum.*

ORAL ANTIPOLIOMYELITIS VACCINE (OPV)

Indications

– Prevention of poliomyelitis

Composition, presentation and route of administration

– Live-attenuated virus vaccine, trivalent (poliovirus types 1, 2 and 3)
– Oral suspension in multidose vial, to be administered on the tongue, with dropper

Dosage and vaccination schedule

One dose = 2 to 3 drops depending on manufacturer.

– *In non endemic areas*
  Administer 3 doses 4 weeks apart: at 6, 10 and 14 weeks of age.
– *In endemic areas*
  Administer 4 doses 4 weeks apart: at birth then at 6, 10 and 14 weeks of age.

Contra-indications, adverse effects, precautions

– No contra-indication.
– Vaccination should be postponed in the event of severe acute febrile illness (minor infections are not contra-indications).
– If a child has diarrhoea when the vaccine is administered, give the usual dose then give an extra dose 4 weeks later.
– May cause (exceptionally): paralytic poliomyelitis, encephalopathy.
– Respect an interval of 4 weeks between each dose.
– *Pregnancy*: ***CONTRA-INDICATED*** *during the first trimester, except if there is a high risk of contamination.*
– *Breast-feeding: no contra-indication*

Remarks

– Protection lasts at least 5 years after 3 doses.
– *Storage: between 2°C and 8°C –*
  For prolonged storage: freeze (–20°C).

ORAL CHOLERA VACCINE O1 and O139

Indications

– Prevention of cholera in both epidemic and endemic contexts

Composition, presentation and route of administration

– Killed whole-cell bivalent vaccine containing *Vibrio cholerae* O1 (serotypes Inaba and Ogawa, and biotypes classical and El Tor) and *Vibrio cholerae* O139
– Oral suspension, 1.5 ml in monodose vial. DO NOT ADMINISTER BY PARENTERAL ROUTE.

Dosage and vaccination schedule

– Child over 1 year and adult: 2 doses administered at least 2 weeks apart
– Shake the vial, squirt the suspension into the mouth (1.5 ml = one full dose).

For young children, the contents of the vial can be drawn up in a syringe and squirted into the mouth.

Contra-indications, adverse effects, precautions

– Do not administer to children less than one year.
– Do not administer in the event of hypersensitivity to any component of the vaccine or history of an allergic reaction to a previous dose.
– Vaccination should be postponed in the event of severe acute febrile illness (minor infections are not contra-indications).
– May cause: nausea, vomiting, abdominal cramping, diarrhoea.
– Drinking water after swallowing the vaccine may dispel its unpleasant taste and prevent vomiting. If the patient vomits the dose of vaccine, wait for 10 minutes, re-administer the same dose and follow with a larger volume of water.
– *Pregnancy: given the severity of the disease (poor foetal outcome), the vaccine should be administered when the risk of contamination is high.*
– *Breast-feeding: no contra-indication*

Remarks

– Immunity develops 7 days after the second dose and lasts at least 5 years.
– *Storage: between 2°C and 8°C. Do not freeze –*
Discard if vaccine has been frozen.

RABIES VACCINE

Indications

– Prevention of rabies after category II and III exposures

Composition, presentation and route of administration

– Inactivated virus vaccine, prepared from cell culture (CCV): purified Vero-cell vaccine (VPCV) or purified chick embryo-cell vaccine (PCECV) or human diploid-cell vaccine (HDCV)
– Powder for injection in monodose vial, to be dissolved with the entire vial of the diluent (0.5 ml or 1 ml) supplied by the manufacturer
– HDCV is administered by IM route only, into the anterolateral part of the thigh in children < 2 years and into the deltoid in children > 2 years and adults.
– VPCV and PCECV may be administered by IM route as above or by intradermal (ID) route into the arm.

Dosage and vaccination schedule

– The 1st dose of vaccine should be administered as soon as possible after exposure, even if the patient seeks medical attention long after exposure (rabies incubation period may last several months). The patient must receive all the recommended doses.
– Vaccination schedules may vary from country to country, check national recommendations. The schedule will depend on the patient's vaccination status prior to exposure and the route of administration used (follow manufacturer's instructions).
– Child and adult: one IM dose = 0.5 or 1 ml, depending on the vaccine used; one ID dose = 0.1 ml

The simplest vaccination schedules endorsed by the WHO are the following:

	No **rabies vaccination or *incomplete* vaccination or *complete* vaccination *with a NTV* or *unknown* vaccination status**		***Complete*** **vaccination *with a CCV***
	IM	**ID**	**IM** or **ID**
D0	2 doses* (one dose in each arm or thigh)	2 doses* (one dose in each arm)	1 dose
D3		2 doses (one dose in each arm)	1 dose
D7	1 dose	2 doses (one dose in each arm)	
D21	1 dose		
D28		2 doses (one dose in each arm)	

* And, depending on the category of exposure, rabies immunoglobulin as a single dose.

Contra-indications, adverse effects, precautions

– No contra-indication for post-exposure vaccination (including during pregnancy and breast-feeding).
– May cause:
  • benign local reactions at the injection site (pain, induration);
  • general reactions (fever, malaise, headache, gastrointestinal disturbances, etc.);
  • exceptionally: anaphylactic reaction.
– For patients receiving chloroquine for prophylaxis or treatment of malaria, use IM route only.
– Do not administer corticoids concomitantly (vaccine efficacy diminished).
– IM vaccination: do not administer into the gluteal region (risk of treatment failure); ensure that the vaccine does not enter a blood vessel (risk of shock): aspirate prior to injection to confirm that the needle is not in a vein.
– ID vaccination: incorrect ID technique results in treatment failure. If correct ID technique cannot be assured, use the IM regimen.
– Do not mix with other vaccines in the same syringe.
– If administered simultaneously with rabies immunoglobulin or other vaccines, use different syringes and injection sites.

Remarks

– Only patients that present a document confirming complete pre-exposure vaccination with 3 doses of a VCC are considered as correctly vaccinated.
– The use of vaccines prepared from animal nerve tissue (NTVs) is not recommended.
– Rabies vaccine is also used for *pre-exposure* vaccination in persons at high risk of infection (prolonged stay in rabies endemic areas, professionals in contact with animals susceptible of carrying the virus). The vaccination schedule includes 3 doses given at D0, D7 and D21 or D28. Booster doses are recommended for persons exposed to permanent or frequent contact with the virus.
– *Storage*:
  • *Powder: between 2°C and 8°C. Do not freeze.*
  • *Diluent: a cold chain is not required for storage. However, at least 12 hours before reconstitution of the vaccine, the diluent must be refrigerated between 2°C and 8°C so that the diluent and lyophilised powder are at the same temperature: a temperature difference during reconstitution may reduce vaccine efficacy. Do not freeze.*
  • *Reconstituted vaccine: use immediately.*

Human RABIES IMMUNOGLOBULIN (HRIG)

Therapeutic action

– Neutralisation of rabies virus. HRIG provides passive immunization against rabies for 3 to 4 weeks.

Indications

– Prevention of rabies after category III exposure (except in patients correctly vaccinated against rabies before exposure), in combination with rabies vaccine
– Prevention of rabies after category II and III exposures in immunodeficient patients (even in patients correctly vaccinated against rabies before exposure), in combination with rabies vaccine

Presentation and route of administration

– 750 UI in 5 ml ampoule (150 UI/ml), for infiltration into the wound and IM injection

Dosage and duration

– Child and adult: 20 IU/kg as a single dose on D0, along with the first dose of rabies vaccine.
– Infiltrate as much of the dose as possible in and around the wound(s), which has been cleaned beforehand. Inject any residual product, using the IM route, in a different site from that used for vaccination. In the event of multiple wounds, dilute the dose 2 to 3-fold with sterile 0.9% NaCl to obtain a sufficient quantity to infiltrate all the sites exposed.
– If HRIG is not available on D0, the first dose of rabies vaccine is administered alone. HRIG can still be given as soon as possible within the next few days. However, HRIG is no longer recommended when 7 or more days have elapsed since the first dose of vaccine was given, as vaccine-induced immunity will have developed by this time.

Contra-indications, adverse effects, precautions

– No contra-indication (including during pregnancy and breast-feeding).
– May cause: fever, myalgia, headache, gastrointestinal disturbances; rarely: allergic and anaphylactic reactions.
– Ensure that the HRIG does not enter a blood vessel (risk of shock): aspirate prior to injection to confirm that the needle is not in a vein.
– For finger wounds, infiltrate with caution to avoid causing a compartment syndrome.
– Do not administer HRIG and rabies vaccine in the same syringe and in the same injection site.

Remarks

– Immunocompetent patients are considered as correctly vaccinated against rabies if they present a document confirming pre-exposure vaccination with 3 doses of cell culture rabies vaccine.
– Highly purified equine immune globulin derivative F(ab')2 may replace HRIG if unavailable. The method of administration is the same but the dose is 40 IU/kg.
– *<u>Storage</u>: between 2°C and 8°C. Do not freeze –*

Human TETANUS IMMUNOGLOBULIN (HTIG)

Therapeutic action

– Neutralisation of tetanus toxin. HTIG provides passive immunization against tetanus for 3 to 4 weeks.

Indications

– Prevention of tetanus in wound management, in patients non immunised or incompletely immunised or in patients whose immunisation status is unknown, in combination with tetanus vaccine
– Treatment of clinical tetanus

Presentation and route of administration

– Solution for injection, in 250 IU (250 IU/ml, 1 ml) or 500 IU (250 IU/ml, 2 ml) ampoule or single-dose syringe, for IM injection. DO NOT ADMINISTER BY IV ROUTE.

Dosage and duration

– *Prevention of tetanus*
  HTIG is administered in the event of tetanus-prone wounds, e.g. wounds with fracture, deep penetrating wounds, bite wounds, wounds containing foreign bodies, wounds contaminated with soil, infected wounds, extensive tissue damage (contusions, burns).
  Child and adult: 250 IU as a single dose; 500 IU if more than 24 hours has elapsed
  HTIG should be administered as soon as possible after injury, along with the tetanus vaccine, in a separate syringe and injection site.
– *Treatment of tetanus*
  Neonate, child and adult: 500 IU as a single dose, to be injected into 2 different sites

Contra-indications, adverse effects, precautions

– Do not administer to patients with known allergy to HTIG.
– May cause (very rarely): allergic reactions.
– Ensure that the HTIG does not enter a blood vessel (risk of shock): aspirate prior to injection to confirm that the needle is not in a vein.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– For minor clean wounds, tetanus vaccine is administered alone.
– SC route may be used but only if IM route is contra-indicated.
– *Storage: between 2°C and 8°C. Do not freeze –*

TETANUS VACCINE (TT)

Indications

– Prevention of tetanus in wound management
– Prevention of maternal and neonatal tetanus in women of childbearing age and pregnant women

Composition, presentation and route of administration

– Purified tetanus toxoid
– Suspension for injection in multidose vial or single-dose syringe, for IM or SC injection into the anterolateral part of the thigh or the deltoid muscle

Dosage and vaccination schedule

– 0.5 ml per injection
– *Prevention of tetanus in wound management*

Wound risk category	**Complete vaccination** (3 doses or more) Time elapsed since last dose:			**Incomplete vaccination** (less than 3 doses) or **no vaccination** or **unknown vaccination status**
	< 5 years	5-10 years	> 10 years	
Clean, minor wounds	No booster required	No booster required	TT one booster dose	Start* or complete tetatus vaccination
All other wounds	No booster required	TT one booster dose	TT one booster dose	Start* or complete tetatus vaccination and administer tetanus immunoglobulin

* At least 2 doses administered 4 weeks apart, then 3 additional doses administered according to the same protocol as that used for women of childbearing age, to ensure longer lasting immunity.

– *Prevention of maternal and neonatal tetanus in women of childbearing age and pregnant women*
5 doses administered according to the following protocol:

TT1	On first contact with medical service or as early in pregnancy as possible
TT2	At least 4 weeks after TT1
TT3	6 to 12 months after TT2 or during subsequent pregnancy
TT4	1 to 5 years after TT3 or during subsequent pregnancy
TT5	1 to 10 years after TT4 or during subsequent pregnancy

Pregnant women should receive at least 2 doses of tetanus vaccine administered at least 4 weeks apart, with the last dose at least 2 weeks before delivery. After delivery, continue vaccination as described in the table above until the required five doses have been administered.

Contra-indications, adverse effects, precautions

- Do not administer in the event of significant reactions to a previous dose of tetanus vaccine.
- Vaccination should be postponed in the event of severe acute febrile illness (minor infections are not contra-indications).
- May cause: minor local reactions (redness, pain at the injection site); exceptionally, anaphylactic reactions.
- *Pregnancy: no contra-indication*
- *Breast-feeding: no contra-indication*

Remarks

- For the prevention of tetanus in wound management, preferred vaccines are:
  - diphtheria-tetanus-pertussis (DTP) or diphtheria-tetanus (DT) in children < 7 years;
  - tetanus-diphtheria (Td) in children ≥ 7 years, adolescents and adults.
  - For the prevention of maternal and neonatal tetanus in women of childbearing age and pregnant women, administer either TT vaccine or tetanus-diphtheria vaccine (Td).
- *Storage: between 2°C and 8°C. Do not freeze –*

TETANUS ANTITOXIN (EQUINE)



Equine tetanus antitoxin should no longer be used, as there is a risk of hypersensitivity and serum sickness.
It should be replaced by human tetanus immunoglobulin.

Therapeutic action

– Neutralisation of tetanus toxin. Tetanus antiserum provides temporary passive immunity against tetanus for 2 weeks.

Indications

– Prevention of tetanus in wound management, in patients non immunised or incompletely immunised or in patients whose immunisation status is unknown, in combination with tetanus vaccine
– Treatment of clinical tetanus

Composition, presentation and route of administration

– Solution prepared from the serum of horses immunised against tetanus toxin
– 1500 IU in 1 ml ampoule, for IM injection. DO NOT ADMINISTER BY IV ROUTE.

Dosage and duration

– *Prevention of tetanus*
Tetanus antiserum is administered in the event of tetanus-prone wounds, e.g. wounds with fracture, deep penetrating wounds, bite wounds, wounds containing foreign bodies, wounds contaminated with soil, infected wounds, extensive tissue damage (contusions, burns).
Child and adult: 1500 IU as a single dose; 3000 IU if more than 24 hours has elapsed
It is administered as soon as possible after injury, along with the tetanus vaccine, in a separate syringe and injection site.
– *Treatment of tetanus*
Neonate: 1500 IU as a single dose
Child and adult: 10 000 IU as a single dose

Contra-indications, adverse effects, precautions

– Do not administer to patients with known allergy to tetanus antiserum.
– May cause: hypersensitivity reactions, anaphylactic shock, Quinke oedema; serum sickness up to 10 days after injection.
– Administer following Besredka's method: inject 0.1 ml by SC route and wait 15 minutes; if no local or general allergic reactions occur, inject 0.25 ml by SC route and wait 15 minutes; if no reactions, administer the injection by IM route.
– Ensure that the injection does not enter a blood vessel (risk of shock): aspirate prior to injection to confirm that the needle is not in a vein.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Equine tetanus antitoxin is not included in the WHO list of essential medicines.
– *Storage: between 2°C and 8°C. Do not freeze –*

YELLOW FEVER VACCINE

Indications

– Prevention of yellow fever:
  - in children from 9 months of age and adults living in or travelling through endemic areas
  - in mass immunisation campaigns in the event of an outbreak

Composition, presentation and route of administration

– Live-attenuated virus vaccine
– Powder for injection in multidose vial, to be dissolved with the entire vial of diluent supplied by the manufacturer, for IM injection into the anterolateral part of the thigh in children under 2 years and SC injection into the deltoid muscle in children over 2 years and adults

Dosage and vaccination schedule

– Child and adult: 0.5 ml as a single dose
– In routine immunisation (EPI), the vaccine is usually administered from 9 months of age, along with the measles vaccine.
– Vaccination is contra-indicated in children less than 6 months. In children between 6 and 9 months, vaccination is only recommended in epidemics, as the risk of virus transmission may be very high.

Contra-indications, adverse effects, precautions

– Do not administer to patients with history of an allergic reaction to a previous injection of yellow fever vaccine, true allergy to egg, immunodeficiency (e.g. symptomatic HIV infection, immunosuppressive therapy).
– Vaccination should be postponed in the event of severe acute febrile illness (minor infections are not contra-indications).
– May cause:
  - minor reactions: mild fever, headache, myalgia;
  - severe reactions (exceptionally): hypersensitivity reactions, encephalitis (especially in children < 9 months and adults > 60 years), multiple organ failure (especially in adults > 60 years).
– Do not mix with other vaccines in the same syringe (inactivation of vaccines).
– If administered simultaneously with EPI vaccines, use different syringes and injection sites.
– *Pregnancy: not recommended. However, given the severity of yellow fever, the vaccine is administered when the risk of contamination is very high (epidemics, unavoidable travel to regions of high endemicity).*
– *Breast-feeding: no contra-indication*

Remarks

– Immunity develops approximately 10 days after injection, and lasts for at least 10 years.
– *Storage:*
  - *Powder: between 2°C and 8°C.*
  - *Diluent: a cold chain is not required for storage. However, at least 12 hours before reconstitution of the vaccine, the diluent must be refrigerated between 2°C and 8°C so that the diluent and lyophilised powder are at the same temperature: a temperature difference during reconstitution may reduce vaccine efficacy. Do not freeze.*
  - *Reconstituted vaccine: between 2°C and 8°C, for 6 hours maximum.*

Drugs for external use, antiseptics and disinfectants

Aciclovir, eye ointment
Alcohol-based, solution or gel
Artesunate rectal
Benzoic acid + Salicylic acid, ointment
Benzyl benzoate
Calamine
Chlorhexidine
Chlorine-releasing compounds
Ciprofloxacin, ear drops
Clotrimazole
Dinoprostone
Ethanol
Ethyl alcohol
Fluorescein
Gentian violet
Hydrocortisone
Malathion
Methylrosanilinium chloride
Miconazole
Mupirocin
NaDCC
Nystatin
Oxybuprocaine, eye drops
Permethrin 1%
Permethrin 5%
Pilocarpine, eye drops
Podophyllotoxin 0.5%
Podophyllum resin
Polyvidone iodine, aqueous solution
Polyvidone iodine, scrub solution
Silver sulfadiazine
Sodium dichloroisocyanurate
Tetracycline, eye ointment
Zinc oxide, ointment

ACICLOVIR eye ointment

Prescription under medical supervision

Therapeutic action

– Antiviral active against herpes virus

Indications

– Treatment of herpes keratitis
– Prevention of herpes keratitis in neonate born to a mother suffering from genital herpes at the moment of childbirth

Presentation

– 3% ointment, tube

Dosage and duration

– *Treatment of herpes keratitis*
  Child and adult: 5 applications/day into the conjunctival sac of both eyes for 14 days or for 3 days after lesions have healed
– *Prevention of herpes keratitis in neonate*
  Immediately after birth: wash the eyes with sterile sodium chloride 0,9% then apply a single dose of aciclovir into the conjunctival sac of both eyes

Contra-indications, adverse effects, precautions

– In neonates, wait 12 hours after application of aciclovir 3% then apply tetracycline eye ointment 1% to prevent gonococcal neonatal conjunctivitis.

Remarks

– *Storage: below 25°C*
  Use within 30 days after first opening.

ALCOHOL-BASED solution or gel

Therapeutic action
– Antiseptic

Indications
– Antiseptic hand rub, before and after procedures, whether gloves are used or not

Presentation
– Ready to use alcohol-based hand rub solution or gel

Use
– Alcohol-based hand rubs can only be used if hands are not visibly dirty or soiled with organic matter. There must be no residual powder on hands (use powder-free gloves) and hands must be dry.
– Apply 3 ml of solution or gel in a cupped hand and spread to cover the entire surface of hands. Rub hands for 20-30 seconds, palm to palm, palm over dorsum, between fingers (fingers interlaced), around the thumbs and nails, until hands are completely dry. Do not dilute the product. Do not rinse off or dry hands.
– As long as hands are not visibly soiled, the product may be reapplied as many times as necessary without handwashing before or after applying the product.

Contra-indications, adverse effects, precautions
– Do not use if:
  • hands are visibly dirty or soiled with organic matter (wash hands);
  • there is residual powder on hands (wash hands);
  • hands are wet (water dilutes alcohol and impedes drying).
– Do not use after direct contact with a patient with a parasitic skin infection (scabies, lice): wash hands.
– Do not use simultaneously with soap or another antiseptic (antagonism, inactivation, etc.).
– Do not use for disinfection of material, patient's skin or mucous membranes.
– May cause: stinging sensation on broken skin.
– In case of eye contact flush immediately with plenty of water.

Remarks
– Dose required and duration of handrubbing may vary depending on the product used. Read the manufacturer's instructions carefully.
– To avoid difficulty in putting on gloves, rub hands until the product is completely dry.
– Use of alcohol-based hand rubs may result in a sticky residue on hands after several applications. In this event, wash hands.
– Some alcohol-based hand rubs can be used for surgical hand antisepsis, however the technique is not the same as for antiseptic hand rub.
– *<u>Storage</u>: below 25°C –*
  Close bottles tightly to avoid evaporation. Keep away from sources of ignition (flame, spark, incandescent material).

ARTESUNATE rectal

Prescription under medical supervision

Therapeutic action

– Antimalarial

Indications

– Initial (pre-referral) treatment of severe falciparum malaria in children less than 6 years, before transfer to a facility where parenteral antimalarial treatment can be administered

Presentation and route of administration

– 50 mg and 200 mg rectal capsules

Dosage and duration

– Child less than 6 years: 10 mg/kg as a single dose before transferring the patient

Weight	50 mg rectal capsule	200 mg rectal capsule
3 to < 5 kg	1	–
5 to < 10 kg	2	–
10 to < 20 kg	–	1

Contra-indications, adverse effects, precautions

– May cause: gastrointestinal disturbances, headache and dizziness.

Remarks

– Buttocks should be held together for at least 1 minute to ensure retention. If capsules are expelled from the rectum within 30 minutes of insertion, re-administer the treatment.
– Up to 2 capsules can be administered simultaneously.
– The treatment of choice of severe falciparum malaria is IV or IM artesunate or IM artemether or IV quinine. When it is absolutely impossible to transfer a patient to a facility where parenteral antimalarial treatment can be administered, artesunate rectal capsules should be administered once daily until the patient is able to take a 3-day course of an artemisinin-based combination.
– *Storage: below 25°C –*

BENZOIC acid + SALICYLIC acid ointment
= Whitfield's ointment

Therapeutic action
– Fungistatic and keratolytic agent

Indications
– Dermatophyte infection of the scalp (tinea capitis), in combination with a systemic antifungal
– Dermatophyte infection of the glabrous skin and skin folds:
  • alone, if lesions are localised, non-extensive
  • in combination with a systemic antifungal, if the lesions are extensive

Presentation
– Benzoic acid 6% + salicylic acid 3% ointment, tube or jar

Dosage
– Child and adult: 2 applications/day, sparingly, to clean and dry skin

Duration
– 3 to 6 weeks, depending on clinical response

Contra-indications, adverse effects, precautions
– Do not apply to exudative lesions, mucous membranes or eyes.
– May cause: skin irritation, local benign inflammation.
– In case of secondary bacterial infection, start appropriate local or systemic treatment before applying Whitfield's ointment.
– In case of contact with eyes or mucous membranes, flush immediately with plenty of water.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks
– Whitfield's ointment is not included in the WHO list of essential medicines.
– *Storage: below 25°C –*
  Once the ointment has been exposed to a high temperature, the active ingredients are no longer evenly distributed: the ointment must be homogenized before using.

BENZYL BENZOATE

Therapeutic action

– Scabicide

Indications

– Scabies

Presentation

– 25% lotion

Preparation and use

– Shake the bottle before application or dilution.
– Dilute the lotion, as required, according to age. Use drinking or boiled water.

	Child < 2 years	Child 2-12 years	Child > 12 years and adult
Preparation	1 part of 25% lotion + 3 parts of water	1 part of 25% lotion + 1 part of water	Undiluted 25% lotion
Contact time	12 hours (6 hours in children < 6 months)	24 hours	24 hours

– Apply the lotion to the whole body, including scalp, postauricular areas, palms and soles. Pay particular attention to skin creases and interdigital web spaces. Do not apply to the face and mucous membranes.
– In children under 2 years: apply only once; wrap hands to avoid accidental ingestion; rinse off when the recommended contact time has elapsed.
– In children ≥ 2 years and adults: a second application (e.g. after 24 hours, with a rinse between the two applications; or two successive applications, 10 minutes apart, when the first application has dried, with a rinse after 24 hours) reduces the risk of treatment failure.

Contra-indications, adverse effects, precautions

– Do not apply to broken or infected skin. In the event of secondary bacterial infection, administer an appropriate local (antiseptic) and/or systemic (antibiotic) treatment 24 to 48 hours before applying benzyl benzoate.
– May cause: burning sensation; contact dermatitis in case of repeated applications; seizures in the event of marked transcutaneous absorption (broken skin, children < 2 years).
– Avoid contact with eyes. In case of eye contact, flush immediately with plenty of water.
– DO NOT SWALLOW (risk of seizures). In case of ingestion: do not induce vomiting, do not perform gastric lavage; administer activated charcoal.
– *Pregnancy: no contra-indication. Do not leave on skin longer than 12 hours; do not repeat application.*
– *Breast-feeding: no contra-indication. Do not apply to the breasts.*

Remarks

– Close contacts should be treated at the same time regardless of whether they have symptoms or not. Decontaminate clothes and bed linen of patients and close contacts simultaneously.
– Itching may persist for 1 to 3 weeks despite successful treatment. Do not re-treat during this period. The treatment may be repeated if specific scabies lesions (scabious burrows) are still present after 3 weeks.
– 5% permethrin cream or lotion is preferred when available, especially in children less than 2 years and pregnant or lactating women.
– *Storage: below 25°C –*

CALAMINE lotion

Therapeutic action
– Antipruritic drug

Indications
– Symptomatic treatment of pruritus

Presentation
– Calamine 8% or 15% lotion, bottle

Dosage
– Apply a thin layer 3 to 4 times/day

Duration
– According to clinical response

Contra-indications, adverse effects, precautions
– Clean the skin before applying the lotion.
– Do not apply to exudative and/or superinfected lesions, mucous membranes or eyes.
– In case of contact with eyes or mucous membranes, flush immediately with plenty of water.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication. Do not apply to the breasts.*

Remarks
– Shake the lotion well before using.
– *Storage: below 25°C –*

CHLORHEXIDINE

Therapeutic action
– Antiseptic

Indications
– Antisepsis of minor and superficial wounds and burns

Presentation
– 5% concentrated solution of chlorhexidine gluconate to be diluted before use
  Check that the solution may be diluted with ordinary, non-distilled water (in this event the formulation should contain a surfactant to prevent the precipitation of chlorhexidine).

Preparation
– Use as a 0.05% aqueous solution:
  For one litre: 10 ml of 5% concentrated solution + 990 ml of clear water, boiled a few minutes and cooled

Contra-indications, adverse effects, precautions
– Do not use undiluted solution.
– Do not bring into contact with body cavities, eyes (risk of corneal damage), brain and meninges, middle ear (risk of deafness if ear drum is perforated).
– Avoid applications to mucous membranes, especially to genital mucous membranes.
– Do not use with soap or other antiseptics (incompatibility).

Remarks
– Also comes in 20% chlorhexidine gluconate concentrated solutions. These solutions usually do not contain a surfactant and must be diluted with distilled water.
– _Storage_:
  • *Concentrated solution: below 25°C.*
  • *Diluted solution: maximum one week.*

CHLORINE-RELEASING COMPOUNDS
(NaDCC, HTH, bleach, chlorinated lime)



Therapeutic action

– Disinfectants

Indications

– Disinfection of medical devices, instruments, linen, floors and surfaces

Presentation

– The potency of chlorine disinfectants is expressed in terms of available chlorine in either:
  • percentage (%)
  • g/litre or mg/litre
  • parts per million (ppm)
  • chlorometric degree (1°chl. = approximately 0.3% available chorine)

1% = 10 g/litre = 10 000 ppm
1 mg/litre = 1 ppm = 0.0001%

– The most widely used chlorine disinfectants are:
  • Sodium dichloroisocyanurate (NaDCC), 1,67 g tab..1 g available chlorine/tab
  • Calcium hypochlorite (HTH), granules..65-70% available chlorine
  • Sodium hypochlorite solutions (liquid bleach):
    - concentrated bleach (extrait de javel) ....36°chl. = 9.6% available chlorine
    - bleach (eau de Javel)...9°chl or 12°chl. = 2.6% or 3.6% available chlorine
  • Chlorinated lime, powder ....25-35% available chlorine

Preparation and use

– The concentration required depends on the amount of organic material present (how clean/unclean the surface is).
– The available chlorine content must always be checked on the product packaging in order to adjust the dilution if necessary.
– Prepare solutions with cold water in non-metallic containers.
– A deposit in HTH solutions and chlorinated lime solutions is normal (use only the supernatant).

	Clean medical devices, equipment, surfaces and linen (after cleaning)	**Surfaces, beds, ustensils in case of cholera** (after cleaning)	**Surfaces, equipment contaminated with blood and other body fluids spills** (before cleaning)	**Corpses, excreta, boots in case of cholera**
Concentration required, expressed in available chlorine	**0.1%** = 1000 ppm	**0.2%** = 2000 ppm	**0.5%** = 5000 ppm	**2%** = 20 000 ppm
NaDCC (1 g available chlorine/tablet	1 tab/litre water	2 tab/litre water	5 tab/litre water	20 tab/litre water
Calcium hypochlorite (70% available chlorine)	15 g/10 litres = 1 level tablespoon for 10 litres water	30 g/10 litres = 2 level tablespoons for 10 litres water	7,5 g/litre = ½ tablespoon for 1 litre water	300 g/10 litres = 20 level tablespoons for 10 litres water
Bleach (2.6% available chlorine)	For 5 litres: 200 ml + 4800 ml water	For 5 litres: 400 ml + 4600 ml water	For 1 litre: 200 ml + 800 ml water	For 5 litres: 4000 ml + 1000 ml water

For more information, see Antiseptics and disinfectants, Part two.

Precautions

- Handle concentrated products with caution (avoid jolts and exposure to high temperatures or flames).
- Do not bring dry products, particularly HTH and chlorinated lime, in contact with organic materials (e.g. corpses): risk of explosion.
- Avoid inhaling vapours and dust when opening or handling the containers.

Remarks

- Sodium dichloroisocyanurate (NaDCC) is less corrosive than the other products.
- Bleach or concentrated bleach, or if not available HTH, may be used to prepare an antiseptic solution at 0.5% available chlorine (as substitute to Dakin's solution), provided sodium bicarbonate (one tablespoon per litre) is added to the final solution to neutralise the alkalinity (e.g. for one litre: 200 ml of bleach 2.6% + 800 ml distilled or filtered water, or if not available, boiled and cooled water + 1 tablespoon of sodium bicarbonate).
- Chloramine T (powder or tablet, 25% available chlorine) is another chlorine-releasing compound used above all as an antiseptic.
- Trichloro-isocyanuric acid (TCCA), in powder or granules (90% available chlorine), is very similar to NaDCC, but its use is limited due to its poor solubility.
- *Storage: in airtight, non-metallic containers, protected from light, heat (and humidity for dry products) – –*
  Chlorinated lime, bleach and concentrated bleach are unstable. HTH is more stable. NaDCC is by far the most stable.

CIPROFLOXACIN ear drops

Prescription under medical supervision

Therapeutic action

– Fluoroquinolone antibacterial

Indications

– Chronic suppurative otitis media

Presentation

– 0.3% ear drops

Dosage

– Child over 1 year: 2 to 3 drops 2 times daily in the affected ear
– Adult: 4 drops 2 times daily in the affected ear

To administer drops, pull back the auricle and maintain the head to one side for a few minutes.

Duration

– 2 to 4 weeks

Contra-indications, adverse effects, precautions

– May cause: headache, local skin eruption or pruritus.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Do not touch let the dropper touch either hands or the ear.
– *Storage: below 25°C*
  Once the bottle has been opened, solution keeps for 4 weeks.

CLOTRIMAZOLE

Therapeutic action

– Antifungal

Indications

– Vaginal candidiasis

Presentation and route of administration

– 500 mg vaginal tablet, with applicator

Also comes in 100 mg vaginal tablets.

Dosage and duration

– *500 mg vaginal tablet*
  Adult: one vaginal tablet as a single dose, at bedtime
– *100 mg vaginal tablet*
  Adult: one vaginal tablet/day for 6 days, at bedtime

Contra-indications, adverse effects, precautions

– May cause: local irritation; allergic reactions.
– *Pregnancy: no contra-indication (do not use the applicator to avoid mechanical trauma)*
– *Breast-feeding: no contra-indication*

Remarks

– Place the tablet on the applicator. Insert the applicator high into the vagina. Push the plunger then remove the applicator.
– For the 6-day treatment schedule (100 mg tab):
  • Do not interrupt treatment during menstruation.
  • Clean the applicator with water after each use.
– *Storage: below 25°C –*

DINOPROSTONE

Prescription under medical supervision

Therapeutic action

– Cervical ripening agent, oxytocic drug (prostaglandin analogue)

Indications

– Induction of labour when the cervix is not favourable, preferably in combination with mifepristone in the case of intrauterine foetal death

Presentation and route of administration

– Vaginal gel containing 1 mg of dinoprostone, in prefilled syringe

Dosage and duration

– 1 mg intravaginally into the posterior fornix every 6 hours, until labour begins (max. 3 doses within 24 hours)

Contra-indications, adverse effects, precautions

– Do not administer in the event of previous caesarean section and grand multiparity if the foetus is viable (risk of uterine rupture).
– Do not administer simultaneously with oxytocin. At least 6 hours must have elapsed since the last administration of dinoprostone before oxytocin can be given.
– May cause: uterine hypertony, gastrointestinal disturbances, modification of the foetal heart rate, foetal distress.
– Regular monitoring of the intensity and frequency of contractions is mandatory after administration of dinoprostone.
– If the foetus is viable, continuous foetal heart monitoring is mandatory for 30 minutes after administration of each dose of dinoprostone and once contractions are experienced or detected.
– *Breast-feeding: non contra-indication*

Remarks

– Misoprostol is another prostaglandin used in the induction of labour when the cervix is not favourable. It is less expensive and easier to store than dinoprostone.
– *Storage: between 2°C and 8°C –*

ETHYL ALCOHOL = ETHANOL

Therapeutic action

– Antiseptic and disinfectant

Indications

– Antisepsis of intact skin prior to injections and venopunctures
– Disinfection of latex stopper of infusion bottles and drug vials (except vaccines), latex injection sites of infusion sets

Presentation

– Mixtures of alcohol (ethanol) and water in different concentrations (e.g. 95% v/v ethanol), sometimes containing additives to avoid their ingestion.
– Alcoholic strength is expressed:
  • preferably as a percentage by *volume* of alcohol (% v/v); e.g. 1000 ml of 95% v/v alcohol contains 950 ml of absolute alcohol.
  • sometimes as a percentage by *weight* of alcohol (% w/w). The % w/w is not equal to the % v/v because the mixture of water and alcohol produces a reduction in volume.
  • sometimes in *degrees* (°) but this should be discouraged as it is a source of error. There are at least 3 different definitions of degrees: the old UK definition (° British proof), the American (° proof) and the one used in French speaking countries (1° = 1% v/v). For example: 40% v/v = 70° proof (British system) = 80° proof (American system) = 40° in French speaking countries.

Preparation

– Use 70% v/v ethanol, which is more effective than higher concentrations.
  To obtain 1 litre of 70% v/v ethanol:
  • take 785 ml of 90% v/v ethanol, or 730 ml of 95% v/v ethanol, or 707 ml of 99% v/v ethanol;
  • add distilled or filtered water to make up a volume of 1 litre;
  • leave to cool and top up with water again to bring the volume back to 1 litre (mixing water and ethanol together produces a reaction whereby volume is reduced).

Precautions

– Do not apply to mucous membranes, wounds or burns: it is painful, irritating and slows the healing process.
– Do not apply on neonatal skin.

Remarks

– Ethanol can be used for disinfection of non-critical medical items (items that are in contact with intact skin only) that are not soiled by blood or other body fluids.
– Critical medical items (surgical instruments, etc.) cannot, under any circumstances, be "sterilized" by alcohol flaming, immersion in ethanol or wiping with ethanol.
– *Storage: below 25°C –*
  Close bottles tightly to avoid evaporation. Keep away from sources of ignition (flame, spark, incandescent material).

FLUORESCEIN

Therapeutic action

– Ophthalmic diagnostic agent

Indications

– Detection of corneal or conjunctival epithelial damage

Presentation

– 0.5% or 2% eye drops in single use vial

Dosage and duration

– Instill 1 or 2 drops into the conjunctival sac.
– Ask patient to blink a few times to spread the dye around; remove excess fluorescein and proceed with the examination.

Contra-indications, adverse effects, precautions

– May cause: local allergic reaction (rare).
– Wait 15 minutes before administering any other kind of eye drops.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– To facilitate the examination, use an ophthalmoscope with a blue filter (increases fluorescence).
– Under normal light, large lesions are visible but small lesions cannot be detected.
– *Storage: below 25°C –*
Vials are designed for single use only; they must be discarded after use.

HYDROCORTISONE

Prescription under medical supervision

Therapeutic action

– Topical corticosteroid

Indications

– Atopic eczema, contact eczema, seborrhoeic dermatitis
– Reactions to insect bites

Presentation

– 1% cream and ointment

Dosage and duration

– Child and adult: apply a thin layer to the affected area only, once or twice daily for 7 days maximum

Contra-indications, adverse effects, precautions

– Do not use:
  • for more than 7 days;
  • in case of acne, rosacea, perioral dermatoses, untreated bacterial (impetigo, etc.), fungal (candidiasis and dermatophytosis) and viral (herpes) skin infections;
  • under occlusive dressing, on large areas of skin or on wounds, especially in infants and children (increased local and systemic adverse effects).
– May cause:
  • irritations, pruritus, burning sensations, skin eruptions, hypopigmentation, contact eczema and urticaria;
  • skin atrophy, dilation of small blood vessels (telangiectasia), stretch marks, skin fragility, delayed wound healing in case of prolonged treatment.
– Apply with precaution to:
  • the eyelids and around the eyes (risk of glaucoma and cataract);
  • the face (risk of rosacea and thinning of the skin);
  • the skin folds (increased adverse effects).
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication. Do not apply to the breasts.*

Remarks

– The cream and ointment are interchangeable. However, preferably use the cream on moist lesions and the ointment on dry and scaly lesions.
– *Storage: below 25°C –*

MALATHION

Therapeutic action

– Pediculicide (organophosphorus insecticide)

Indications

– Head pediculosis (lice)

Presentation

– 0.5% lotion

Use

– Apply lotion to hair and scalp; pay particular attention to the areas behind the ears and around the nape of the neck.
– Leave on hair for:
  • 8 hours in children from 6 months to 2 years;
  • 12 hours in children over 2 years and adults.
– Rinse with plenty of water.
– It is recommended to repeat the application after 10 days.

Contra-indications, adverse effects, precautions

– Use with caution and under medical supervision in children under 2 years.
– May cause: scalp irritation.
– Avoid contact with eyes. In the event of product entering the eye, rinse with plenty of water.
– DO NOT SWALLOW. The first signs of poisoning after accidental ingestion are gastrointestinal disturbances (vomiting, diarrhoea). Dyspnoea, seizures or coma are signs of severe intoxication. As soon as the first signs appear, administer injectable atropine as an antidote.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Examine everyone in contact with a patient and treat only those infected. Preventive treatment of non-infected persons is ineffective and increases the risk of resistance.
– Malathion is flammable. Keep medication away from heat sources.
– Malathion is not included in the WHO list of essential medicines.
– *Storage: below 25°C –*

METHYLROSANILINIUM CHLORIDE
= GENTIAN VIOLET = GV = CRYSTAL VIOLET

Carcinogenic effects have been demonstrated in animals. As a precaution, this product should not be used in humans if an alternative is available.

Therapeutic action

– Antifungal, weak antiseptic, drying agent

Indications

– Oropharyngeal candidiasis, mammary candidiasis in nursing mothers
– Certain wet skin lesions (impetigo, dermatophytosis oozing lesions)

Presentation

– Powder to be dissolved

Preparation

– Dissolve 2.5 g of powder (= one half-teaspoon) in 1 litre of clear water (boiled a few minutes and cooled) to obtain a 0.25% solution.
– Shake well and leave to settle. Pour carefully into another bottle to eliminate any possible sediment.
– Before preparation, carefully wash both the bottle for dilution and the storage bottle with hot water and leave to dry.

Use

– 2 applications/day for a few days

Contra-indications, adverse effects, precautions

– Do not apply to wounds or ulcerations.
– Do not apply to the face or genital mucous membranes.
– May cause:
  • irritation, ulcerations, allergic reactions;
  • persistent staining of the skin.
– The solution should not be swallowed.
– The use of cooking oil or vaseline around lips before swabbing can limit the risk of skin coloration.
– Stop treatment in the event of allergic reactions or if new ulcerations develop.
– In the event of product entering the eye, rinse with plenty of water.
– Avoid contact with clothes (causes permanent staining of fabrics).

Remarks

– Gentian violet is no longer included in the WHO list of essential medicines.
– <u>*Storage*</u>*:*
  • *Powder to be dissolved: unlimited*
  • *Diluted solution: maximum 1 week*

MICONAZOLE

Therapeutic action

– Antifungal

Indications

– Cutaneous candidiasis (groin, abdominal folds, intergluteal fold, sub-mammary folds, interdigital spaces of the toes or fingers)
– Candidal balanitis
– Mild dermatophyte infection of the glabrous skin and skin folds

Presentation

– 2% cream, tube

Dosage

– Child and adult: 2 applications/day, sparingly, to clean and dry skin

Duration

– *Cutaneous candidiasis*: 2 to 4 weeks
– *Candidal balanitis*: one week
– *Dermatophyte infection*: 2 to 3 weeks

Contra-indications, adverse effects, precautions

– May cause: local irritation; allergic reactions.
– In the event of genital candidiasis, inform patients that the fat content in the cream damages the latex in condoms and diaphragms: protection no longer guaranteed due to increased porosity and risk of rupture.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication. In the event of mammary candidiasis, clean the breast before nursing and apply cream after nursing.*

Remarks

– For the treatment of vulvovaginal candidiasis, miconazole cream may complement, but does not replace, treatment with clotrimazole or nystatin vaginal tablets.
– *Storage: below 25°C –*

MUPIROCIN

Prescription under medical supervision

Mupirocin should not be used in patients with extended impetigo (more than 5 lesions or more than one skin area involved), bullous impetigo, ecthyma, impetigo with abscess, and in immunodeficient patients: in such cases, oral antibiotic therapy is required.

Therapeutic action

– Antibacterial

Indications

– Localized non bullous impetigo (less than 5 lesions in a single area)

Presentation

– 2% ointment, tube

Dosage and duration

– Child and adult: 3 applications/day for 7 days, to clean and dry skin
  The patient should be reassessed after 3 days. If there is no response, switch to oral antibiotic therapy.

Contra-indications, adverse effects, precautions

– May cause: pruritus and burning sensation; allergic reactions.
– If applying to the face, avoid contact with eyes.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication. Do not apply to the breasts.*

Remarks

– Do not mix with other ointments (effect of mupirocin decreased).
– Avoid touching the lesions; keep them covered with gauze if possible.
– *Storage: below 25°C –*

NYSTATIN

Therapeutic action
– Antifungal

Indications
– Vaginal candidiasis

Presentation and route of administration
– 100 000 IU vaginal tablet

Dosage and duration
– Adult: one tablet of 100 000 IU/day at bedtime for 14 days

Contra-indications, adverse effects, precautions
– May cause (rarely): local irritation, allergic reactions.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks
– Tablets must be moistened and inserted high into the vagina.
– Do not interrupt treatment during menstruation.
– Prefer clotrimazole 500 mg vaginal tablet as a single dose for this indication.
– *Storage: below 25°C –*
Once a tablet is removed from the packaging, it must be used immediately.

OXYBUPROCAINE eye drops

Prescription under medical supervision

Therapeutic action

– Local anaesthetic

Indications

– Short-term anaesthesia of conjunctiva and cornea

Presentation

– 0.4% eye drops in single use vial

Dosage and duration

– *Removal of foreign bodies*
  Up to 3 drops into the conjunctival sac, administered one to two minutes apart
– *Measurement of intraocular pressure*
  1 drop into the conjunctival sac

Contra-indications, adverse effects, precautions

– Do not use repeatedly (risk of severe and permanent corneal damage).
– May cause: stinging on instillation.
– Wait 15 minutes before administering any other kind of eye drops.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Anaesthesia is produced within one minute and lasts 10 to 20 minutes.
– Anaesthetic eye drops (oxybuprocaine, tetracaine, etc.) are intended for specific therapeutic or diagnostic procedures. They must not be given to the patient for home use. In the event of intense ocular pain, prescribe an appropriate oral analgesic.
– *Storage: below 25°C*
  Vials are designed for single use only; they must be discarded after use.

PERMETHRIN 1%

Therapeutic action

– Pediculicide (pyrethroid insecticide)

Indications

– Head pediculosis (lice)

Presentation

– 1% lotion

Use

– Apply lotion to hair and scalp; pay particular attention to the areas behind the ears and around the nape of the neck.
– Leave on hair for 10 minutes.
– Rinse with plenty of water.
– It is recommended to repeat the application after 10 days.

Contra-indications, adverse effects, precautions

– Use with caution and under medical supervision in children under 6 months.
– May cause: scalp irritation.
– Avoid contact with eyes. In case of eye contact, flush immediately with plenty of water.
– DO NOT SWALLOW. In case of accidental swallowing, the treatment is symptomatic.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication*

Remarks

– Examine everyone in contact with a patient and treat only those infected. Preventive treatment of non-infected persons is ineffective and increases the risk of resistance.
– For better results, use the lotion rather than the shampoo.
– Permethrin 5% cream is used for the treatment of scabies in children over 2 months and adults.
– *Storage: below 25°C –*

PERMETHRIN 5%

Therapeutic action

– Scabicide (pyrethroid insecticide)

Indications

– Scabies

Presentation

– 5% cream or lotion

Use

– Apply the cream or lotion to the whole body, including scalp, postauricular areas, palms and soles. Pay particular attention to skin creases and interdigital web spaces. Do not apply to the face and mucous membranes.
– In children under 2 years: wrap hands to avoid accidental ingestion.
– Leave on skin for 8 to 12 hours then rinse off.
– A single application may be sufficient. A second application 7 days later reduces the risk of treatment failure.

Contra-indications, adverse effects, precautions

– Do not use in children under 2 months (safety not established).
– Do not apply to broken or infected skin. In the event of secondary bacterial infection, administer an appropriate local (antiseptic) and/or systemic (antibiotic) treatment 24 to 48 hours before applying permethrin.
– May cause (rarely): skin irritation.
– Avoid contact with eyes. In case of eye contact flush immediately with plenty of water.
– DO NOT SWALLOW. In case of accidental ingestion, the treatment is symptomatic.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication. Do not apply to the breasts.*

Remarks

– Close contacts should be treated at the same time regardless of whether there have symptoms or not. Decontaminate clothes and bed linen of patients and close contacts simultaneously.
– Itching may persist for 1 to 3 weeks despite successful treatment. Do not re-treat during this period. The treatment may be repeated if specific scabies lesions (scabious burrows) are still present after 3 weeks.
– 5% permethrin used for the treatment of scabies is not to be confused with 1% permethrin used for the treatment of head and pubic lice.
– *Storage: below 25°C –*

PILOCARPINE eye drops

Prescription under medical supervision

Therapeutic action

- Cholinergic anti-glaucoma agent, miotic

Indications

- Chronic open-angle glaucoma

Presentation

- 2% eye drops

Also comes in 4% eye drops.

Dosage

- Adult: 1 drop into the conjunctival sac 4 times daily

Duration

- Life-long treatment

Contra-indications, adverse effects, precautions

- Do not administer to children.
- Do not administer to patients with iridocyclitis and some forms of secondary glaucoma.
- Do not administer to patients with history of retinal detachment (trauma or family history) nor to myopic patients, except if it is possible to examine the peripheral retina (fundus examination) prior to the initiation of therapy and routinely thereafter.
- May cause:
  - transient blurred vision, visual field modification, difficulty with dark adaptation (inform patients, especially drivers);
  - retinal detachment in patients with myopia;
  - ocular irritation, headache (decreasing after 2 to 4 weeks); rarely, allergic reactions.
- In case of treatment with another eye drop, wait 5 minutes before instilling the second eye drop treatment.
- Patients should have regular monitoring of intraocular pressure during therapy.
- *Pregnancy: no contra-indication*
- *Breastfeeding: no contra-indication*

Remarks

- Do not touch the dropper with the hands.
- *Storage: below 25°C*
  Once the bottle has been opened, solution keeps for 2 weeks.

PODOPHYLLOTOXIN 0.5%

Prescription under medical supervision

Therapeutic action

– Antiviral, antimitotic, cytolytic agent active against human papillomaviruses (HPVs)

Indications

– External genital warts, perianal warts and vaginal warts

Presentation

– 0.5% solution or gel, with applicator tips

Dosage

– Apply podophyllotoxin to warts twice daily.
– For vaginal warts, allow to dry before removing the speculum.

Duration

– 3 consecutive days per week, for a maximum of 4 weeks

Contra-indications, adverse effects, precautions

– Do not use to treat genital warts in children.
– Do not apply to warts > 3 cm.
– Do not apply to cervical, urethral, anorectal or oral warts.
– Do not apply to healthy skin.
– May cause local reactions: erythema, ulceration, pain in area where applied.
– Use a new applicator tip for each application.
– Avoid contact with eyes. In case of eye contact flush immediately with plenty of water.
– *Pregnancy*: ***CONTRA-INDICATED***
– *Breast-feeding*: ***CONTRA-INDICATED***

Remarks

– When treatment is contra-indicated or has failed after 4 weeks, change treatment method (cryosurgery, electrosurgery, surgical removal).
– *Storage*: *below 25°C –*

PODOPHYLLUM resin

Prescription under medical supervision

Therapeutic action

– Antiviral, antimitotic, cytolytic agent active against human papillomaviruses (HPVs)

Indications

– External genital warts, perianal warts and vaginal warts

Presentation

– Podophyllum resin in alcohol or compound benzoin, 10%, 15% and 25% solution.

Use

– Always apply a protective layer of vaseline or zinc ointment on the surrounding skin prior to treatment.
– Apply podophyllum resin to warts:
  • For external warts, leave on the warts for 1 to 4 hours then wash with soap and water.
  • For vaginal warts, allow to dry before removing the speculum.

Duration

– Apply once weekly if necessary, for a maximum of 4 weeks.

Contra-indications, adverse effects, precautions

– Do not use to treat genital warts in children.
– Do not apply to healthy skin or mucous membranes, or to warts > 3 cm, or to cervical, urethral, anorectal or oral warts.
– May cause:
  • local reactions: erythema, ulceration, pain in area where applied;
  • systemic adverse effects: gastrointestinal disturbances, haematological and neurological disorders (possibly severe) in the event of prolonged or excessive application, or when applied to bleeding lesions.
– Avoid contact with eyes. In case of eye contact flush immediately with plenty of water.
– *Pregnancy*: ***CONTRA-INDICATED***
– *Breast-feeding*: ***CONTRA-INDICATED***

Remarks

– Use by preference 0.5% podophyllotoxin solution: it is as effective as podophyllum resin, but less irritant and toxic. Another advantage is that the patient may apply the solution to the warts himself; whereas the resin must always be applied by medical staff.
– When treatment is contra-indicated or has failed after 4 weeks, change treatment method (cryosurgery, electrosurgery, surgical removal).
– *Storage*: *below 25°C* –

POLYVIDONE IODINE = POVIDONE IODINE = PVI
aqueous solution

Therapeutic action

– Antiseptic and disinfectant

Indications

– Antisepsis of intact or broken skin and mucous membranes
– Disinfection of latex stopper of infusion bottles and drug vials (except vaccines), latex injection sites of infusion sets

Presentation

– 10% aqueous solution

Use

– *Antisepsis of intact skin (injections, punctures)*
  Apply 10% solution to the puncture/injection site and allow to dry before inserting the needle. The skin should be cleaned beforehand if soiled or if the procedure is invasive (lumbar puncture, epidural/spinal anaesthesia, etc.).
– *Preoperative skin antisepsis*
  Apply 10% solution twice. Allow to dry between each application (do not dab to accelerate drying). Incise once the 2nd application has dried. The surgical site should be cleaned beforehand with PVI scrub solution.
– *Wound antisepsis*
  Apply 10% solution to small superficial wounds.
  For large wounds and burns, wound irrigation, etc., dilute PVI (¼ of 10% PVI and ¾ of 0.9% NaCl or sterile water) then rinse with 0.9% NaCl or sterile water.

Contra-indications, adverse effects, precautions

– Do not use with other antiseptics such as chlorhexidine (incompatibility) or mercury compounds (risk of necrosis).
– Do not use in preterm neonates and neonates < 1.5 kg.
– Due to the risk of transcutaneous resorption of iodine, do not use repeatedly nor on large areas, especially in pregnant and lactating women and infants < 1 month.
– May cause: local skin reactions; exceptionally, allergic reactions.

Remarks

– The antiseptic effect of PVI begins after 30 seconds of contact. However, a minimum contact time of 1 minute is recommended to eliminate bacteria.
– *Storage: below 25°C –*
  Once the bottle has been opened, solution keeps 30 days.

POLYVIDONE IODINE = POVIDONE IODINE = PVI
scrub solution

Therapeutic action

– Antiseptic

Indications

– Antiseptic hand wash and surgical hand antisepsis
– Preoperative skin preparation (patient preoperative showering, antiseptic cleansing of the surgical site)
– Cleansing of contaminated wounds

Presentation

– 7.5% scrub solution

Also comes in 4% scrub solution.

Use

– *Antiseptic hand wash*
  Wet hands; pour 5 ml of solution, rub hands for 1 min; rinse thoroughly; dry with a clean towel.
– *Surgical hand antisepsis*
  There are different protocols, for information:
  Wet hands and forearms; spread 5 ml of solution on hands and forearms and rub for 1 or 2 min (i.e. 30 seconds or 1 min for each side); brush the nails of each hand for 30 seconds; rinse.
  Spread again 5 ml of solution on hands and forearms and rub for 2 min; rinse thoroughly; dry with a sterile towel.
– *Patient preoperative showering*
  Wet the whole body including hair; apply the solution and rub until the foam is white, start at the head and move down, finishing with the feet. Pay special attention to hair, armpit, hands, perineum, genitals and toes. Leave in contact a few minutes and rinse; dry with a clean towel; put on clean clothes.
– *Antiseptic cleansing of surgical site*
  Rub for 1 min the surgical site, using sterile gauze soaked with sterile water and solution; rinse with sterile water; dry with sterile gauze.
– *Cleansing of contaminated wounds*
  Prepare a diluted solution:
  With 7.5% solution: 1 part of solution + 4 parts of sterile 0.9% NaCl or water
  With 4% solution: 1 part of solution + 2 parts of sterile 0.9% NaCl or water
  Clean the wound; rinse thoroughly.

Contra-indications, adverse effects, precautions

– Do not use with others antiseptics such as chlorhexidine (incompatibility) or mercury compounds (risk of necrosis). Given the possible interactions between different groups of antiseptics, PVI scrub solution must only be used with products of the same group (i.e. PVI aqueous or alcoholic solutions).
– Do not use in preterm neonates and neonates < 1.5 kg (use ordinary soap).
– May cause: local skin reactions (contact dermatitis); exceptionally: allergic reactions.
– <u>Pregnancy and breast-feeding</u>: *no contra-indication for brief application; no prolonged use.*

Remarks

– For preoperative skin preparation, cleansing of the surgical site is followed by the application of 10% PVI solution.
– <u>Storage</u>: *below 25°C –*

SILVER SULFADIAZINE

Therapeutic action

– Antibacterial (group of sulfonamides)

Indications

– Prophylaxis and treatment of infections of burns (except superficial, first-degree burns)
– Treatment of infections of leg ulcers and bed sores

Presentation

– 1% sterile cream, tube or jar

Use

– Clean the wound then apply a 3 to 5 mm layer of silver sulfadiazine cream to the wound once daily and cover with sterile compresses.

Duration

– Until satisfactory healing has occurred.
– For burns that require skin grafting: until skin graft is performed.

Contra-indications, adverse effects, precautions

– Do not use:
  • in patients with hypersensitivity to sulfonamides;
  • in infants less than one month.
– Do not apply other topical treatments to wounds where silver sulfadiazine is applied.
– May cause:
  • skin reactions;
  • when applied to a large burned area: systemic absorption with risk of adverse effects related to sulfonamides (haematologic disorders, gastrointestinal disturbances, etc.).
– *Pregnancy: avoid if possible during the last month of pregnancy*
– *Breast-feeding: no contra-indication*

Remarks

– *Storage: between 8°C and 25°C –*
  Close the tube or the jar properly after opening to avoid exposure to light.

SODIUM DICHLOROISOCYANURATE = NaDCC



Therapeutic action

– Disinfectant (chlorine-releasing compound)

Indications

– Disinfection of medical devices, instruments, linen, floors and surfaces

Presentation

– 1.67 g NaDCC effervescent tablet, releasing 1 g available chlorine when dissolved in water.

Also comes in different strengths and in granules and powder.

Preparation and use

– *Pre-disinfection of soiled instruments*
  0.1% available chlorine solution (1000 ppm): 1 tablet of 1 g available chlorine per litre
  Immediately after use, soak instruments for 15 minutes, then clean instruments.
– *Disinfection of clean instruments*
  0.1% available chlorine solution (1000 ppm): 1 tablet of 1 g available chlorine per litre
  Soak previously cleaned instruments for 20 minutes, rinse thoroughly and dry.
– *Disinfection of linen*
  0.1% available chlorine solution (1000 ppm): 1 tablet of 1 g available chlorine per litre
  Soak for 15 minutes, rinse thoroughly (at least 3 times).
– *General disinfection (surfaces, floors, sinks, equipment, etc.)*
  See Chlorine-releasing compounds and Antiseptics and disinfectants, Part two.

Precautions

– Prepare solutions with cold water, in non metallic containers.
– NaDCC can corrode metal. The risk is limited for good quality stainless steel instruments if concentration, contact time (20 minutes maximum) and thorough rinsing recommendations are respected.
– For disinfection of linen: use only for white cotton or linen (risk of discolouration).
– Do not expose the product to flames. Do not incinerate.
– DO NOT SWALLOW. Do not store NaDCC tablets near oral tablets.
– Avoid inhaling vapours and dust when opening or handling the containers.
– Do not mix with acid solutions such as urine, etc. (release of toxic chlorine gas) and detergents.

Remarks

– NaDCC may be used for wound antisepsis but only if the formulation is intended for this purpose: 0.1% available chlorine solution (1000 ppm): 1 tablet of 1 g available chlorine per litre. For prolonged use, protect the healthy skin around the wound with vaseline.
  Caution: some formulations used for disinfecting floors contain additives (detergents, colouring, etc.) and cannot be used on wounds. Check label or leaflet.
– Some formulations can be used for the disinfection of drinking water (Aquatabs®, etc.). Follow manufacturer's instructions.
– NaDCC is also called sodium troclosene, sodium dichloro-s-triazinetrione.
– *<u>Storage</u>: in airtight container, protected from light, heat and humidity, in a well ventilated room* – –

TETRACYCLINE eye ointment

Therapeutic action
– Antibacterial

Indications
– Treatment of bacterial conjunctivitis
– Treatment of trachoma (by preference use oral azithromycin for this indication)
– Prevention of chlamydial and gonococcal neonatal conjunctivitis

Presentation
– 1% ointment, tube

Dosage and duration
– Wash the eyes with boiled and cooled water before each application. Use sterile sodium chloride 0.9% for newborns.
– Apply tetracycline 1% into the conjunctival sac of both eyes:
  • *Conjunctivitis*: 2 applications/day for 7 days
  • *Trachoma*: 2 applications/day for 6 weeks
  • *Prevention of neonatal conjunctivitis*: one single application immediately after birth

Contra-indications, adverse effects, precautions
– Do not use in patients with hypersensitivity to tetracyclines.
– May cause allergic reactions; stop treatment in the event of serious reaction.

Remarks
– Tetracycline eye ointment replaces silver nitrate 1% eye drops for the prevention of neonatal conjunctivitis.
– For the treatment of trachoma, azithromycin as single dose is as effective as a 6-week course of tetracycline ointment.
– Gonococcal neonatal conjunctivitis must be treated systemically with ceftriaxone IM (125 mg as a single dose). When systemic treatment cannot be given immediately, apply tetracycline eye ointment to both eyes every hour until ceftriaxone is available.
– Oxytetracycline and chlortetracycline are used in the same way as tetracycline.
– In the event of eye infection, use only eye ointment; dermal ointment must never be applied to the eyes.
– *Storage: below 25°C –*
  Do not use after expiry date.

ZINC OXIDE ointment

Therapeutic action

– Skin protector

Indications

– Dermatosis of kwashiorkor
– Nappy rash
– Eczema
– First-degree burns
– Protection of healthy skin when caustic products such as podophyllum resin or podophyllotoxin are to be applied

Presentation

– 10% zinc oxide ointment, tube or jar

Dosage

– 1 to 3 applications/day

Duration

– According to clinical response

Contra-indications, adverse effects, precautions

– Clean the skin before applying the ointment.
– Do not apply to exudative and/or superinfected lesions.
– *Pregnancy: no contra-indication*
– *Breast-feeding: no contra-indication. Do not apply to the breasts.*

Remarks

– *Storage: below 25°C –*
Once the ointment has been exposed to a high temperature the active ingredients are no longer evenly distributed: the ointment must be homogenized before using.

Part two

Organisation and management of a pharmacy

Drug quality and storage

Prescription, cost, compliance

Antiseptics and disinfectants

WHO model list of essential medicines

Organisation and management of a pharmacy

Organisation and rigorous management of the pharmacy are crucial in all health facilities in order to:
– maintain a permanent stock of essential medicines and supplies of quality;
– reduce costs;
– save time and optimise the work of the staff;
– facilitate management and continuous consumption evaluation.

In any case, national pharmaceutical policies and regulations must be taken into account when implementing pharmaceutical activities.

Preliminary information

Drug designation

All active ingredients have an *international non-proprietary name* (INN). Drugs are designated by their INN in all standardised lists. The INN should also be used in standard therapeutic regimens and management documents, in order to avoid confusion, since drugs are sold under their INN or a variety of brand names, depending on the manufacturer (e.g. ampicillin may be sold as Britapen®, Penbritin®, Pentrexyl®, Totapen®, etc.).

Generic drugs are copies of drugs whose patents have expired. They can therefore be made by any pharmaceutical laboratory and are most often sold under their INN or occasionally under a new brand name.

Selection of essential medicines

Most countries have a national list of essential medicines. If there is no national list, refer to the latest WHO list.

The use of such a list presents several advantages:
– it simplifies supply and reduces costs: most drugs on the WHO list are available in generic forms at affordable prices;
– it facilitates co-ordination of international aid and obtains approval from organisations which subsidise projects (United Nations, European Union, etc.).

The list of selected drugs is drawn in accordance with pre-established standardised therapeutic regimens. This offers two major advantages:
– better treatments due to more rational use of a restricted number of essential drugs;
– economic and administrative improvements concerning purchasing, storage, distribution and control.

Proposing the same drug in many different strengths or forms should be avoided. In most cases, one form/strength for adults and one paediatric form/strength are sufficient. This facilitates management and avoids confusion in prescriptions.

At times, local prescription usages should be taken into account, e.g. in French-speaking Africa, 500 mg aspirin tablets are used; in English-speaking Africa, 300 mg tablets.

Note: medical supplies (dressing, injections, sutures, etc.) should be limited to essentials and the object of a standardised list.

Drug classification

In the WHO list, drugs are classified according to their therapeutic action. This classification presents a certain pedagogical advantage but cannot be used as the basis of a storage arrangement system (e.g. a drug may appear in several classes).

Médecins Sans Frontières recommends a storage arrangement system according to the route of administration and in alphabetical order.
Drugs are divided into 6 classes and listed in alphabetical order within each class:
– oral drugs
– injectable drugs
– infusion fluids
– vaccines, immunoglobulins and antisera
– drugs for external use and antiseptics
– disinfectants

This classification should be used at every level of a management system (order forms, stock cards, inventory lists, etc.) in order to facilitate all procedures.

Levels of use

More limited lists should be established according to the level of health structures and competencies of prescribers. Restricted lists and the designation of prescription and distribution levels should be adapted to the terminology and context of each country.

Quantitative evaluation of needs when launching a programme

Once standard therapeutic regimens and lists of drugs and supplies have been established, it is possible to calculate the respective quantities of each product needed from the expected number of patients and from a breakdown of diseases.

Several methods have been suggested (see *Estimating drug requirements*, WHO). Quantities calculated may differ from those corresponding to true needs or demands (this can be the case when the number of consultations increases or when prescribers do not respect proposed therapeutic regimens).

In an emergency situation (especially with displaced population), the *Emergency Health Kit*, developed in collaboration with the WHO, UNHCR, MSF, etc., is designed to meet the care needs of a displaced population of 10,000 people for 3 months. Afterwards, specific local needs should be evaluated in order to establish a suitable supply.

Routine evaluation of needs and consumption allows verification of how well prescription schemes are respected and prevents possible stock ruptures.

Layout of a pharmacy

Whether constructing a building, converting an existing building, central warehouse or health facility pharmacy, the objectives are the same only the means differ.

Premises

Functional premises should be designed in order to assure:
– the safe keeping of stocks;
– correct storage of drugs and supplies;
– rational and easy management.

Characteristics of a warehouse

Dimensions of warehouse are determined by storage needs, which depend on:
- the number of drugs and supplies to be stocked;
- the number and activities of facilities;
- distribution and receiving frequency: the lesser the frequency the greater the volume needed, thus the greater the space needed.

It is better to have too much space than not enough: a cramped warehouse is difficult to work, and any increases in stock or activity are also difficult. For 1 m^2 of storage space count 3 m^2 of floor space.

Security of stocks requires solid doors, locks, windows and ceilings.

Correct preservation of drugs depends on temperatures and humidity, conditions that are very often difficult to control in tropical countries.
- Correct ventilation is necessary; fans mainly reduce humidity, air-conditioning reduces heat and humidity.
- A ceiling underneath the roof is essential in order to reduce the ambient temperature; the space between the ceiling and roof must be ventilated.
- Windows should be shaded to avoid exposure of drugs to direct sunlight.
- Floors should be covered in cement (slightly inclined, if possible, to facilitate cleaning).

Interior layout of a warehouse

The organisation should be logical and correspond to the circuit "reception, storage, distribution".

Shelves and pallets

Solid and stable shelves are indispensable. In tropical countries where termites attack wood, metal structures are preferred. As they can be dismantled, it is easy to adjust spaces between shelves and alleys to better accommodate goods to be stored.

Space between shelves and walls improves ventilation.

No products or packaging, even large-sized, should be stored on the floor, but on pallets which permit air circulation and protect against humidity.

Stocking areas

Within a warehouse, or close by, stocking areas should be provided.
- Receiving area: for stocking parcels before unpacking and checking freight and quality control.
- Distribution area: for stocking peripheral orders before distribution. Each destination should have a designated area where parcels may be stocked before distribution.

Receiving and distribution areas should be near access doors in order to facilitate handling.

It is also recommended to plan a stocking area for empty boxes, used to prepare orders for peripheral health facilities.

Workspace(s)

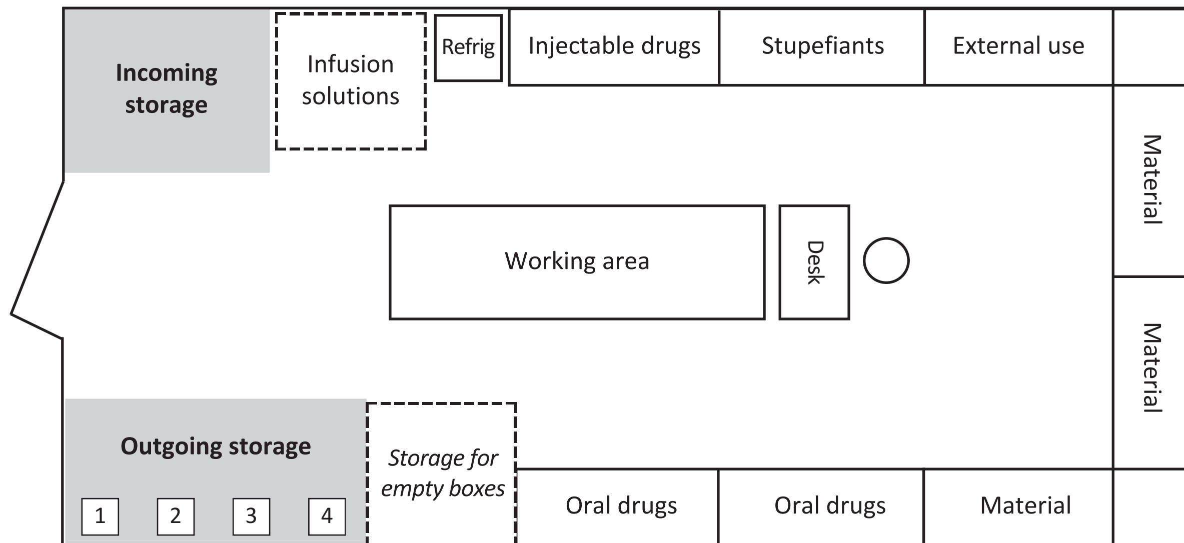
A workspace should be set up in the receiving area and in the distribution area to verify deliveries and prepare orders

Desk

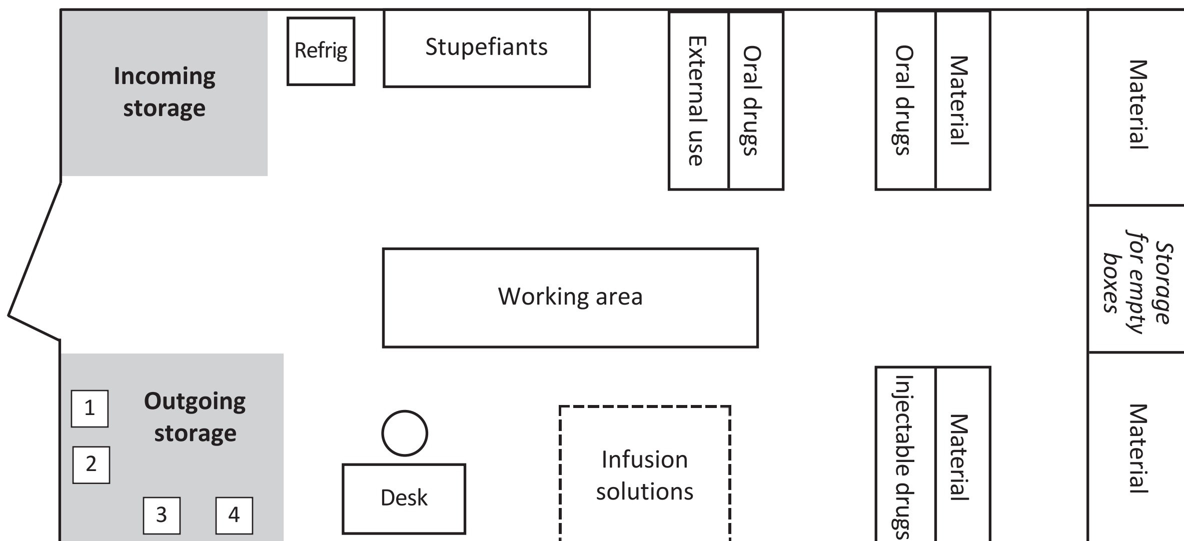
For the person in charge of the pharmacy, a desk near a light source should be set up for administrative work and for keeping documents.

Examples of pharmacy layout

Schema 1



Schema 2



The arrangement of shelves, tables or other furniture, varies according to the layout of the premises.

For larger stocks or central pharmacies, use several rooms and apply the same principles by adapting layouts to needs: administration, cold room, refrigerators, etc.

Arrangement of drugs and supplies

Storage of drugs not requiring a cold chain

Drugs are arranged according to the classification adopted:

- oral drugs
- injectable drugs

– infusions
– drugs for external use and antiseptics
– disinfectants

In each category of products (oral, injectable, etc.) are classified alphabetically.

Each product should have a designated place, well identified by a fixed label indicating the INN, form and strength. By attributing a specific place to each item it is possible to immediately see the quantity available and to react quickly to avoid stock shortages.

Provide for sufficient space between and for each product.

Clearly indicate expiry dates on boxes (large marker). Arrange products with the earliest expiry date at the front of the shelves and those with the latest at the back. This is essential to avoid drugs expiring during storage.

So that persons not familiar with the INN system can find their way around in case of emergency or replacement, a list of commercial names and the corresponding INN can be put up, e.g.:

Bactrim®	see cotrimoxazole
Clamoxyl®	see amoxicillin
Flagyl®	see metronidazole
Valium®	see diazepam

Storage of controlled substances

Narcotics and other controlled substances should be placed under lock and key.

Storage of products requiring a cold chain

Products needing a cold chain should be stored in a refrigerator (between 2–8°C): vaccines, immunoglobulins, serums, insulin, ergometrine, oxytocin, dinoprostone, certain laboratory tests, etc.

Storing medical materials/supplies

Given the diversity of items, do not to use alphabetical ordering, but group articles by category: injections, dressings, sutures, reagents and laboratory material, etc.

Storing bulky materials

Put a few boxes in their normal place and, on a label, indicate where the rest of the stock is kept. Do not disperse the rest of the stock in several places.

– The storage arrangement should allow a 'visual stock check':
  - It should be possible to quickly count the number of boxes for each product and evaluate, in a few minutes, the number of weeks or months that can be covered with the stock available.
  - An empty space behind a label immediately shows that the product is out of stock.
– Only a few hours should be needed to perform a complete inventory.

Management of a pharmacy

Organisation of activities

The management of the pharmacy should be entrusted to a single person having received adequate training. This person is the only person possessing keys to the pharmacy and narcotics cupboard and is helped by one or more assistants, depending on the workload.

Tasks and responsibilities should be clearly defined. One assistant should be able to replace the person in charge if necessary.

It is important to draw up a work calendar (orders, distributions, inventories, management of expired drugs, etc.) in order to spread out the workload.

Stock management

Stock cards

The stock card is the principle instrument for stock control. A stock card is established for each product (drugs and supplies) and updated at each movement. Stock cards are used to:
– identify all stock movements: in and out;
– determine at any moment the theoretical level of stocks;
– follow–up the consumption of different facilities;
– correctly plan and prepare orders;
– determine losses (differences between theoretical stock and actual stock).

Example of a stock card

Item: AMOXICILLIN		Strength/Form: 250 mg, tab			
Code:		Packaging unit: box 1,000 tab			
AMC = 9,000					
Date	**Origin/Destination**	**IN**	**OUT**	**STOCK**	**Remarks/Signature**
01/02/16	Brought forward (previous stock card)			20,000	
01/02/16	Central warehouse	80,000		100,000	Exp. 08/2018
02/02/16	Health centre 1		5,000	95,000	
06/02/16	Health centre 2		2,000	93,000	
06/02/16	Health centre 3		2, 000	91,000	
01/03/16	**Inventory**			**91,000**	10,000 (03/16) 11,000 (01/17) 70,000 (08/18)
02/03/16	Health centre 1		6,000	85,000	
05/03/16	Health centre 2		2,000	83,000	
05/03/16	Health centre 3		1,000	82,000	
31/03/16	Expired March 16		1,000	81,000	Exp. 03/2016
01/04/16	Health centre 1		6,000	75,000	
06/04/16	Health centre 2		1,000	74,000	
06/04/16	Health centre 3		2,000	72,000	

The following should be noted on stock cards:
- the INN, form and strength;
- all movements (in, out, origin, destination, loss due to expiration, damages) and dates;
- inventories and dates.

The following may also be included:
- average monthly consumption;
- stock levels: buffer stock, running stock;
- other stock areas for a product;
- unit price;
- current orders and dates.

Quantities in and out are always recorded in units (e.g. 5,000 tablets, 80 ampoules) and never in number of boxes.

Write a single operation per line, even if several operations take place the same day.

Note: stock cards are always equired, even when computer assisted stock management is used.

Quantities to retain and order (stock level)

- Average monthly consumption (AMC)
  Calculated from outgoing stock recorded on stock cards: add the quantities of several months (3, 6 or 12) in the out column and divide the total by the number of months considered.
- Running stock = consumption between two supply deliveries
  Running stock corresponds to the quantity of each drug consumed between two supply deliveries (e.g. if deliveries are quarterly, running stock = AMC x 3).
- Buffer stock
  This stock is planned to compensate for possible late deliveries, losses, and increases in consumption. It is calculated according to the delivery delay of orders.
  Buffer stock quantities are generally evaluated as half of the consumption during the period between two deliveries. It depends on risks that a programme may run: stock ruptures or drug expiration in specific situations (resources, seasonal supply problems, etc.).
  For example, if the delivery delay is two months, the buffer stock corresponds to the quantity consumed in one month.
- Quantities to be ordered
  Quantities to order are based on data from stock cards:
  • actual stock level (inventory) on the day of the order
  • running stock
  • buffer stock
  • delay period between order and delivery
  • orders not yet delivered
  Order = (running stock + buffer stock + probable consumption during delivery delay) – (inventory + orders not yet delivered).

Order forms

Concerning orders from peripheral facilities to the central pharmacy, it is recommended to use pre-printed order forms which indicate the INN, form (tablet, capsule, vial, ampoule, etc.) and strength.

The following may also be included:
- stock levels,
- AMC.

Orders should be in triplicate, dated and countersigned by persons in charge of health structures. Two copies are sent to the supplier: one serves as a way bill and may also be used for invoicing, the second stays with the supplier. The third copy stays at the health facility.

Example:
Health facility order form, 6-month supply period, minimum stock of 3 months (2 month delivery delay + 1 month buffer stock)

Health structure: *Beboro*

Head of structure: *Jeanne Maritoux, Ph*

Date: *26.06.16* Signature: *XXX*

ORAL DRUGS

NAME	PRESENTATION	Price	Stock	Monthly consump.	Qty ordered	Qty delivered
Acetylsalicylic acid	300 mg tab	0.01	55,000	10,000	5,000	
Ascorbic acid	250 mg tab	0.04	—	—	—	
Aluminium hydroxyde	500 mg tab	0.03	15,000	6,000	21,000	
Amoxicillin	250 mg tab	0.18	16,000	4,000	8,000	

Receiving orders

All orders should be accompanied by a way bill or invoice and packing list.

On reception, the number of parcels should be checked, then their contents should be verified:
- ensure that products delivered correspond to products ordered, and that the quantities conform to those on the packing list;
- packaging, labelling and expiry dates of each product should be checked, as well as the aspect of the product;
- look for special storage conditions (cold chain).

The supplier should be notified of all irregularities.

Then, drugs and material are integrated into stocks at their designated places. Incoming quantities are recorded on stock cards.

Way bills, invoices and packing lists are to be classed with orders in an "orders" file and kept for 3 years or more according to current regulations.

Inventory

An inventory of current stock quantities and expiry dates should be done before each order.

Stock cards give a theoretical figure of stock quantities, but actual quantities of each product should be verified (physical stock). Differences may arise due to errors in recording or due theft. These differences should be clarified.

An inventory may only be easily done if the pharmacy is correctly arranged. It is an indispensable task.

During an inventory there should be no stock movements, i.e. incoming or outgoing stock.

Distribution

– Distribution to health facilities
  Each health facility sends the central warehouse two copies of the order form.
  On both copies, actual quantities supplied by the central warehouse are recorded in the "Qty delivered" column.
  One on these copies is sent with the delivery.
  After verifying that all products have been correctly recorded on their respective stock cards, the second copy is placed in a file established for health facility. The exit date on the stock card should be the same as the date on the order form.

– Dispensing drugs to patients
  Drug packaging should be presentable. Use plastic bags that can be resealed by pressure (Minigrip®).
  Prepare labels for each drug, clearly showing:
  • the name of the drug (INN), form and strength;
  • the dosage written out in full or in symbols.

  Put the number of tablets corresponding to a complete treatment and the label into the bag.

  In busy centres it is better to have two people responsible for dispensing drugs in order to double check prescription deliveries; the first collects the drugs prescribed, the second verifies and gives them to patients with all necessary explanations, slightly away from other patients.

  So that patients correctly follow treatment, adequate explanations should be given:
  • how to take the drug,
  • for how long,
  • possible adverse effects (e.g. drowsiness caused by anti-histamines),
  • precautions to be taken (e.g. avoid alcohol with metronidazole).

Persons dispensing drugs should be able to give patients the information they need.

Interpreters are needed if several languages exist in the same region

Donations of recuperated medicines and medical samples

It is not recommended to solicit or accept supplies coming from collections of drugs recuperated from consumers in industrialised countries, or free samples distributed by manufacturers.

They are very often specialised drugs unknown to prescribers and unsuitable for local pathologies. The multiplication of different drugs supplied interfere with the implementation of standardised therapeutic regimens and makes any form of management impossible.

Drug quality and storage

Drug quality influences treatment efficacy and safety. Quality depends on correct manufacturing and storage: high-quality drugs are available when using rational buying procedures and when suppliers are reliable. It is also essential to assure optimum transportation and storage conditions.

Quality standards

Each drug is characterised by particular norms written in pharmacopoeia or files presented by manufacturers and recognised by competent authorities in each country. These norms concern aspects (colour, odour, etc.), physicochemical properties, analysis procedures, shelf life and storage conditions.

Analysis certificates guarantee that products from one batch (products from the same production cycle) conform to official quality standards in the country of manufacture. These certificates are provided for each product by manufacturers.

Every unit (box and bottle) should be clearly labelled; each label should clearly indicate the:
– INN,
– form and dosage,
– number of units (tablets, ampoule, etc.) or the volume (syrup, etc.),
– name and address of the manufacturer,
– batch number,
– expiry date.

Storage conditions

Stability of drugs depends on both environmental factors such as temperature, air, light and humidity, and drug-related factors such as the active ingredient itself, the dosage form (tablet, solution, etc.) and the manufacturing process. It is therefore necessary to respect storage instructions given in this guide or by manufacturers (on notices and labels) if the recommendations are not identical.

Temperature

The temperature in the store should not be above 25°C.

Storage temperatures are defined by European pharmacopoeia as follows:

freezer	- 15	to	0°C
refrigerator	+ 2	to	+ 8°C
cool	+ 8	to	+ 15°C
ambient temperature	+ 15	to	+ 25°C

During transit and transportation temperatures may attain 50 to 60°C inside vehicles, shipping containers or on docks and, in this case, shelf life and expiry dates may no longer be guaranteed.

Freezing may be detrimental, particularly for solutions, leading to the precipitation of active ingredients or the shattering of ampoules.

Vaccines, immunoglobulins and antisera are products that are sensitive to heat and light. Even though new techniques produce vaccines that are less sensitive to heat (called "thermostable"), they still have to be stored in the refrigerator between 2°C and 8°C, and the cold chain must be strictly respected during transport.

The vaccine vials may have a heat-sensitive monitor (VVM). The square on the monitor changes colour when exposed to heat over a period of time: if the square is lighter than the circle, the vaccine can be used. If the square is the same colour or darker than the circle, the vial must be destroyed.
Vials of oral polio (OPV), measles, tuberculosis (BCG), yellow fever, hepatitis B, tetanus (TT) and diphtheria-tetanus-pertussis (DTP) vaccines may have a VVM.

Air and humidity

In a store, relative humidity should not be above 65% (there are several devices for humidity measurement).

Air is a factor of deterioration due to its content of oxygen and humidity. All containers should remain closed. In airtight and opaque containers (hospital type), drugs are protected against air and light. Opening containers long before the use of drugs should be avoided.

Patients should be informed that tablets should not be removed from blisters until immediately before administration.

Light

Drugs should be protected from light, particularly solutions. Parenteral forms should be preserved in their packaging. Coloured glass may give illusory protection against light.

Deterioration

It is important to be familiar with the normal aspects of each drug (colour, odour, solubility, consistency) in order to detect changes, which may indicate its deterioration. It is important to know that deterioration does not always lead to a detectable external modification.

The principal consequence of deterioration is *a reduction of therapeutic activity*, which leads to more or less grave consequences for the individual and/or community.
For example, the use of expired antibacterials does not cure an infection and also favours the emergence of resistant strains.
It is not recommended to compensate for a possible reduction of activity by a random increase in the usual dose, as there is a real danger of overdose when using toxic drugs.

In time, certain drugs undergo a deterioration leading to the development of substances much more dangerous, thus *an increase in toxicity*. Tetracycline is the principal example: the pale, yellow powder becomes brownish and viscous, its use therefore being dangerous even if before the expiry date.

An increase in allergen strength has been observed in certain drugs such as penicillins and cephalosporins.

Suppositories, pessaries, creams and ointments that have been melted under heat should not be used. The active ingredient is no longer distributed in a homogenous manner.

Oral rehydration salts may be used as long as they keep their aspect of white powder. Humidity transforms them into a compact mass, more or less brownish and insoluble. They are therefore unfit for consumption, whatever their expiry date.

Expiration

Drugs deteriorate progressively and according to various processes, even if stored in adequate conditions. In most countries, regulations impose an obligation on manufacturers to study the stability of their products in standardised conditions and to guarantee a minimum shelf life period. The expiry date indicated by manufacturers designates the date up to and including which the therapeutic effect remains unchanged (at least 90% of the active ingredient should be present and with no substantial increase in toxicity).
The expiry date indicated on the label is based on the stability of the drug in its original and closed container. Shelf life period currently guaranteed is from 3 to 5 years. Less stable substances are only guaranteed for 1 or 2 years.

The expiry date should be indicated on the label with storage instructions.

Expired drugs

Expiry dates are to be respected due to legal obligations and considerations of therapeutic responsibility.

In cases where the only available drugs have expired, a doctor may be led to take on the responsibility of using these drugs.

It is evident that a drug does not become unfit for consumption the day after its expiry date. If a product has been stored in adequate conditions (protected from humidity and light, packaging intact and at a medium temperature) and if modification of aspects or solubility have not been detected, it is often preferable to use the expired drug than to leave a gravely ill patient without treatment.

Expiry dates for drugs that require very precise dosage should be strictly respected due to a risk of under-dosage. This is the case for cardiotonic and antiepilectic drugs, and for drugs that risk becoming toxic, such as cyclines.

Destruction of expired or unusable drugs and material

It is dangerous to throw out expired or unusable drugs or to bury them without precaution. For more information about destruction of drugs and material see *Interagency Guidelines For Safe Disposal of Unwanted Pharmaceuticals in and after emergencies*, WHO/99.2.

Prescription, cost, compliance

SOME SUGGESTIONS FOR

Reducing risks - Reducing costs - Facilitating compliance

It is possible to promote a more rational use of medicines, as much for safety as for cost, by a judicious choice of therapeutic regimens and the resulting lists of medicines.

Limiting the use of injectable drugs

Numerous patients demand treatment with injectable drugs, which they imagine to be more effective. Certain prescribers also believe that injections and infusions are more technical acts and thus increase their credibility.

Parenteral treatment is always more costly than oral treatment. The price of the drug itself is higher for an equal dose of active ingredient. It requires costly disposable material. It exposes patients to complications due to poorly tolerated products (abscesses, necrosis due to IM quinine injections or antibacterials, etc.) or badly performed injection techniques (symptoms of overdose after a IV injection given too rapidly, sciatic nerve damage, etc.). If disposable injection supplies are re-used, there is a risk of bacterial or viral contamination (tetanus, hepatitis, HIV, etc.).

When both oral and injectable drugs are equally effective, parenteral administration is only justified in case of emergency, digestive intolerance or when a patient is unable to take oral medication. Oral drugs should replace injectable drugs as soon as possible during the course of treatment.

Limiting the use of syrups and oral suspensions

Taking liquid drugs is often easier, especially for young children and more so if they are sweetened or flavoured. It is, however, recommended to limit their use for numerous reasons:

– *Risk of incorrect usage*

  Outside of hospitals, determining the correct dosage is hazardous: spoons never contain standard volumes (soup spoons, dessert spoons, tea spoons). Oral suspensions should be prepared with a specified amount of clean water, and well shaken prior to administration. There is therefore a risk of overdose or giving an insufficient dosage.

  Some oral suspensions must be kept refrigerated; their storage at room temperature is limited to a few days, and with syrups there is a risk of fermentation.

  In numerous countries syrups are thought of as "cough medicine". Confusion between cough mixtures and antibacterial suspensions or syrups is common.

– *Economic considerations*

  Compared to the price of tablets or capsules, the price of syrups and oral suspensions is considerably higher. Even using a powder for subsequent reconstitution, the costs may be 2 to 7 times higher than an equivalent dose due to the cost of the bottle itself and higher transportation costs due to weight and volume.

Studying the choice of treatment regimens

The choice of a treatment regimen often influences compliance and cost. The shortest and least divided (1 to 2 doses per day) treatments are most often recommended. Single dose treatments are ideal, when indicated.

For the treatment of malaria, tuberculosis and HIV infection, fixed-dose combinations (coformulated tablets) should preferably be used in order to improve compliance.

Considering non-essential medicines and placebos

In developing countries as in industrialised countries, patients with psychosomatic complaints are numerous. The problems that motivate their consultations may not necessarily be remedied with a drug prescription. Is it always possible or desirable to send these patients home without a prescription for a symptomatic drugs or placebo? If so, what placebo should be prescribed?

When national drug policy is strict and allows neither the use of placebos nor non-essential symptomatic drugs, other products are often used in an abusive manner, such as chloroquine, aspirin, and even antibacterials.

Conversely, a placebo may take the place of an effective and needed drug. This risk is real, but seems less frequent, which makes the introduction of placebos on a list of essential drugs relevant. Multivitamins may present a type of harmless and inexpensive placebo. Their composition generally corresponds to preventive treatment of vitamin deficiency and they have no contra–indications.

Numerous non-prescription drug products (tonics, oral liver treatments presented in ampoules) have no therapeutic value and, due to their price, cannot be used as placebos.

Antiseptics and disinfectants

Definition

Antiseptics are used to kill or eliminate microorganisms and/or inactivate virus on living tissues (intact or broken skin and mucous membranes).

Disinfectants are used to kill or eliminate microorganisms and/or inactivate virus on inanimate objects and surfaces (medical devices, instruments, equipment, walls, floors).

Certain products are used both as an antiseptic and as a disinfectant (see specific information for each product).

Selection

Recommended products

1) *Core list*

No single product can meet all the needs of a medical facility with respect to cleaning, disinfection and antisepsis. However, use of a limited selection of products allows greater familiarity by users with the products in question and facilitates stock management:
– ordinary soap;
– a detergent and, if available, a detergent-disinfectant for instruments and a detergent-disinfectant for floors and surfaces;
– a disinfectant: chlorine-releasing compound (e.g. NaDCC);
– an antiseptic: 10% polyvidone iodine or chlorhexidine.

2) *Complementary list*

Other products can be used, according to the activities carried out, resources, and options for obtaining the product, locally or otherwise:

– **Ethanol** and **isopropanol**
  By virtue of its rapid action (< 30 seconds), alcohol, if available locally, is useful to disinfect:
  • intact skin, before taking a blood sample or performing an injection (except vaccines),
  • latex stoppers of drug vials.
  Alcohol acts faster than polyvidone iodine, but its duration of action is shorter.
  Alcohol can only be used on intact skin. Application to mucous membranes or broken skin is contra-indicated, however, alcohol may be used on broken skin in the event of accidental exposure to blood.
  Alcohol is more effective at 60-70% concentration than at 90-95%.

– **Alcohol-based** hand rubs
  Alcohol-based hand rubs (ABH) are used for hand antisepsis. Some, but not all, ABH may also be used for surgical hand antisepsis.
  Not all ABH preparations are equivalent. For example, for antiseptic hand rub, depending on the product specifications:
  • Bactericidal effect may be achieved with a single application of 30 seconds duration, or 2 consecutive applications of 30 seconds each, or a single application of 60 seconds duration.
  • The volume of rub required per application may be 3 or 5 ml.

Thus, when purchasing locally, it is important to verify the quality of the product and specific instructions for use (number of applications, duration of application, and volume to be used per application).
For surgical activity, ensure that the product is suitable for use as a surgical hand rub. Follow manufacturer ’s instructions for use.
All alcohols and alcohol-based products are flammable. Precautions should be taken during storage and use to avoid contact with a heat source (flame, electrocautery, etc.).

– **Polyvidone iodine (PVI) scrub solution**
  7.5% or 4% PVI scrub solution is used for antiseptic cleansing of healthy skin, contaminated wounds and surgical site, as well as antiseptic hand wash and surgical hand wash.
  Given the possible interactions between different groups of antiseptics, antiseptic cleansing and antisepsis should only be carried out using products from the same class. For example, for pre-operative skin preparation, PVI scrub solution is used for cleansing, then PVI 10% dermal solution is used for antisepsis.

– **Glutaraldehyde** (2% solution)
  Glutaraldehyde is used for high-level disinfection of heat-sensitive items, which cannot withstand heat sterilisation, notably endoscopes/endoscopy equipment.
  Instructions for glutaraldehyde use must be followed scrupulously:
  1) two preliminary washes of the equipment through immersion in a detergent-disinfectant solution for instruments, followed each time by rinsing;
  2) complete immersion of the equipment in a 2% glutataldehyde solution for 20 minutes;
  3) thorough final rinsing, with filtered water (or sterile water for endoscopes introduced into a sterile cavity) to eliminate any residue;
  4) thorough drying with a sterile towel;
  5) sterile wrapping and use within 24 hours.

  Glutaraldehyde is available as 2% ready-to-use solution (e.g. Korsolex RTU®, Steranios 2%®); concentrated solution that must be diluted to obtain a 2% solution (e.g. 25% or 38.5% solutions); preparations requiring « activation » (alkalinisation) before use, through addition of the agent provided with the product (e.g. Cidex®, Glutrex®).
  Glutaraldehyde solution is irritating to skin and mucous membranes, and releases toxic vapours. Personnel exposed to glutaraldehyde should take precautions to protect skin and eyes and avoid inhalation of vapours (risk of nausea, headache, breathing disorders, rhinitis, eye irritation, dermatitis).
  Glutaraldehyde solutions are flammable. Precautions should be taken during storage and use to avoid contact with a heat source.

Non-recommended products

– Hydrogen peroxide (3% or 10 volumes) has limited efficacy as antiseptic agent but can be useful to clean contaminated wounds. In addition, concentrated solutions are dangerous to transport and handle.
– Mercury compounds such as phenylmercuric borate, merbromin (Mercurochrome®), mercurobutol (Mercryl®), thimerosal (Merthiolate®, Timerosal®) have limited efficacy, may cause serious adverse effects (toxic for kidneys, central nervous system and digestive tract; allergies) and pollute the environment. Their use must be abandoned.
– Hexachlorophene is toxic for the central nervous system and its efficacy is limited.
– Ether is often wrongly used as an antiseptic; it removes sticky residues of plaster.
– Eosin is a drying agent, often wrongly used as an antiseptic.

None of these products is included in the WHO list of essential medicines.

Preparation and use of antiseptic solutions

Preparation

Aqueous solutions of many antiseptics can be contaminated by pathogens (especially *Pseudomonas aeruginosa*) during handling. To avoid this, the following precautions must be taken:

– Prepare all aqueous antiseptic solutions with clean water that has been boiled for a few minutes and cooled.
– Replace all aqueous solutions at least once a week.
– Only prepare small amounts at a time to avoid wastage and the temptation to keep expired solutions.
– Never mix a fresh solution with a “leftover” solution.
– Wash bottles with hot water and leave to dry before each refill.
– Never use a cork stopper (it promotes contamination; cork inactivates certain antiseptics such as chlorhexidine).
– Mark on the bottles:
  • the name of the product,
  • its concentration,
  • the date of preparation or the date of expiry.

Every medical facility should define a clear policy concerning the renewal of antiseptic solutions.

Use

– Do not use antiseptic solutions belonging to different classes for the same procedure: incompatibilities between different compounds exist.
– Antiseptics should be used when wounds are contaminated or infected. Clean, non-infected wounds may be cleaned with 0.9% sodium chloride; it is not necessary to apply an antiseptic.
– In case of accidental exposure to blood (needlestick or broken skin): the injured area should be washed well with soap and water. No evidence exists that antiseptics reduce the risk of transmission, however, their use – after thorough cleaning – is not contraindicated. Use 2.6% bleach diluted 1/5 or 1/10, or 70% alcohol, or 10% polyvidone iodine solution and leave in contact for 5 minutes.
– Disinfection of skin when administrating a vaccine is not recommended; rather, simply clean the injection site with clean water. Certain vaccines (for example, BCG) may be inactivated in the presence of an antiseptic. If an antiseptic is used despite this recommendation, it must be allowed to dry before vaccine injection.

Preparation and use of disinfectant solutions

The effectiveness of disinfection can be impaired by error in preparation (concentration, temperature), failure to follow recommended contact times, or deterioration of the product due to poor storages conditions.

Personnel carrying out disinfection should wear protective clothing when preparing or using disinfectant solutions: gown, rubber apron, gloves with long cuffs, goggles and mask.

Preparation

Solutions should be prepared with clean water (chlorine solutions should be prepared with cold water only, in non-metal containers).

– Solution for disinfecting floors and surfaces: prepare just before use, and discard any unused solution.
– Solution for pre-disinfection of medical devices and instruments: replace daily. The solution may be used for a maximum of 24 hours; if visibly soiled, discard and replace with fresh soaking solution before 24 hours are up.
– Solution for disinfection of medical devices and instruments: prepare just before and discard after use.

Do not add any product (e.g. a detergent, descaling agent) to disinfectant solutions.

Disinfection of floors and surfaces

– Apply detergent-disinfectant intended for floors and surfaces[a], without rinsing. Follow manufacturer's instructions for dilution and specific preparation procedures.

Or

– After cleaning with a detergent (cleaning product without an antimicrobial agent) and rinsing with water, apply a 0.1% active chlorine solution. Preliminary washing and rinsing are essential: the activity of chlorine is reduced in the presence of organic material (sputum, vomit, faeces, blood and other body fluids), and the detergent used may be incompatible with chlorine. Contact time is 15 minutes. Stainless steel surfaces should be rinsed with water after disinfection with chlorine solution.

The use of detergent-disinfectant products reduces workload (cleaning and disinfection are carried out as a single procedure), but they have the disadvantage of being weak detergents and leaving a film, which causes dirt to build up on the floors. It is thus necessary to alternate their use with that of a detergent alone. Each medical facility should establish a clear policy addressing this issue.

Disinfection of linen

After hand washing, followed by rinsing: soak the clean linen in a solution of 0.1% active chlorine for 15 minutes and rinse thoroughly (3 rinses).

After machine-washing at 60°C: soak the linen in a 0.1% active chlorine solution for 2 to 3 minutes and rinse thoroughly (3 rinses).

Pre-disinfection of reusable medical devices/instruments

– After use, soak medical devices (disassembled, forceps and scissors opened):
  • In a detergent-disinfectant solution intended for medical devices and instruments[a]. Use a syringe to irrigate the cavities of hollow devices with the same solution.
  For correct dilution and soak times, follow manufacturer 's instructions; use a timer.

  Or

  • In 0.1% available chlorine solution for 15 minutes (use a timer). Use a syringe to irrigate the cavities of hollow devices with the solution.
  Comply with recommended soaking times and concentrations (risk of corrosion of metal instruments). Soaking for too long (> 15 minutes) and/or in a solution that is too concentrated will increase the risk of corrosion.
– Rinse with clean water, using a syringe for hollow cavities.
– Dry with a clean, dry, lint-free cloth.

[a] For example a quaternary ammonium detergent-disinfectant.

Cleaning-disinfection of reusable medical devices/instruments

After the pre-disinfection step:

– Immerse the material in a detergent-disinfectant solution intended for medical devices and instruments[b] (for correct dilution and soak times, follow manufacturer's directions). Scrub with a soft, non-abrasive brush. Use a bottle brush for hollow devices, or irrigate with a syringe. Rinse with clean water, drain and dry with a clean, dry, lint-free cloth.

Or

– Wash (as above) with detergent and rinse with clean water. Then soak in 0.1% available chlorine solution for 20 minutes (use a timer). Comply with recommended soak times and concentrations (risk of corrosion of metal instruments). Rinse with clean water, drain and dry with a clean, dry, lint-free cloth.

[b] For example a quaternary ammonium detergent-disinfectant.

19th edition

WHO Model List of Essential Medicines (April 2015)

Explanatory notes

The **core list** presents a list of minimum medicine needs for a basic health-care system, listing the most efficacious, safe and cost–effective medicines for priority conditions. Priority conditions are selected on the basis of current and estimated future public health relevance, and potential for safe and cost-effective treatment.

The **complementary list** presents essential medicines for priority diseases, for which specialized diagnostic or monitoring facilities, and/or specialist medical care, and/or specialist training are needed. In case of doubt medicines may also be listed as complementary on the basis of consistent higher costs or less attractive cost-effectiveness in a variety of settings.

The **square box symbol (□)** is primarily intended to indicate similar clinical performance within a pharmacological class. The listed medicine should be the example of the class for which there is the best evidence for effectiveness and safety. In some cases, this may be the first medicine that is licensed for marketing; in other instances, subsequently licensed compounds may be safer or more effective. Where there is no difference in terms of efficacy and safety data, the listed medicine should be the one that is generally available at the lowest price, based on international drug price information sources. Not all square boxes are applicable to medicine selection for children — see the second EMLc for details.

Therapeutic equivalence is indicated only on the basis of reviews of efficacy and safety and when consistent with WHO clinical guidelines. National lists should not use a similar symbol and should be specific in their final selection, which would depend on local availability and price.

The **a** symbol indicates that there is an age or weight restriction on use of the medicine; details for each medicine can be found in Table 1.1.

Where the ***[c]*** symbol is placed next to the complementary list it signifies that the medicine(s) require(s) specialist diagnostic or monitoring facilities, and/or specialist medical care, and/or specialist training for their use in children.

Where the **[c]** symbol is placed next to an individual medicine or strength of medicine it signifies that there is a specific indication for restricting its use to children.

The presence of an entry on the Essential Medicines List carries no assurance as to pharmaceutical quality. It is the responsibility of the relevant national or regional drug regulatory authority to ensure that each product is of appropriate pharmaceutical quality (including stability) and that, when relevant, different products are interchangeable.

For recommendations and advice concerning all aspects of the quality assurance of medicines see the WHO Medicines website http://www.who.int/medicines/areas/quality_assurance.

Medicines and dosage forms are listed in alphabetical order within each section and there is no implication of preference for one form over another. Standard treatment guidelines should be consulted for information on appropriate dosage forms.
The main terms used for dosage forms in the Essential Medicines List can be found in Table 1.2.

Definitions of many of these terms and pharmaceutical quality requirements applicable to the different categories are published in the current edition of *The International Pharmacopoeia* http://www.who.int/medicines/publications/pharmacopoeia.

1. ANAESTHETICS	
1.1 General anaesthetics and oxygen	
1.1.1 Inhalational medicines	
halothane	**Inhalation.**
isoflurane	**Inhalation.**
nitrous oxide	**Inhalation.**
oxygen	**Inhalation** (medicinal gas).
1.1.2 Injectable medicines	
ketamine	**Injection:** 50 mg (as hydrochloride)/ mL in 10- mL vial.
propofol*	**Injection:** 10 mg/ mL; 20 mg/ mL. * Thiopental may be used as an alternative depending on local availability and cost.
1.2 Local anaesthetics	
□ bupivacaine	**Injection:** 0.25%; 0.5% (hydrochloride) in vial. **Injection for spinal anaesthesia:** 0.5% (hydrochloride) in 4- mL ampoule to be mixed with 7.5% glucose solution.
□ lidocaine	**Injection:** 1%; 2% (hydrochloride) in vial. **Injection for spinal anaesthesia:** 5% (hydrochloride) in 2- mL ampoule to be mixed with 7.5% glucose solution. **Topical forms:** 2% to 4% (hydrochloride).
lidocaine + epinephrine (adrenaline)	**Dental cartridge:** 2% (hydrochloride) + epinephrine 1:80 000. **Injection:** 1%; 2% (hydrochloride **or** sulfate) + epinephrine 1:200 000 in vial.
Complementary List	
ephedrine	***Injection:*** *30 mg (hydrochloride)/ mL in 1- mL ampoule.* *(For use in spinal anaesthesia during delivery, to prevent hypotension).*
1.3 Preoperative medication and sedation for short-term procedures	
atropine	**Injection:** 1 mg (sulfate) in 1- mL ampoule.
□ midazolam	**Injection:** 1 mg/ mL. **Oral liquid:** 2 mg/ mL **[c]**. **Tablet:** 7.5 mg; 15 mg.
morphine	**Injection:** 10 mg (sulfate **or** hydrochloride) in 1- mL ampoule.

2. MEDICINES FOR PAIN AND PALLIATIVE CARE	
2.1 Non-opioids and non-steroidal anti-inflammatory medicines (NSAIMs)	
acetylsalicylic acid	**Suppository:** 50 mg to 150 mg. **Tablet:** 100 mg to 500 mg.
ibuprofen a	**Oral liquid:** 200 mg/5 mL. **Tablet:** 200 mg; 400 mg; 600 mg. a Not in children less than 3 months.
paracetamol*	**Oral liquid:** 125 mg/5 mL. **Suppository:** 100 mg. **Tablet:** 100 mg to 500 mg. * Not recommended for anti-inflammatory use due to lack of proven benefit to that effect.
2.2 Opioid analgesics	
codeine	**Tablet:** 30 mg (phosphate).
□ morphine*	**Granules (slow-release; to mix with water):** 20 mg – 200 mg (morphine sulfate). **Injection:** 10 mg (morphine hydrochloride **or** morphine sulfate) in 1- mL ampoule. **Oral liquid:** 10 mg (morphine hydrochloride **or** morphine sulfate)/5 mL. **Tablet (slow release):** 10 mg–200mg (morphine hydrochloride **or** morphine sulfate). **Tablet (immediate release):** 10 mg (morphine sulfate). *Alternatives limited to hydromorphone and oxycodone
2.3 Medicines for other common symptoms in palliative care	
amitriptyline	**Tablet:** 10 mg; 25 mg; 75 mg.
cyclizine **[c]**	**Injection:** 50 mg/ mL. **Tablet:** 50 mg.
dexamethasone	**Injection:** 4 mg/ mL in 1- mL ampoule (as disodium phosphate salt). **Oral liquid**: 2 mg/5 mL. **Tablet:** 2 mg **[c]**; 4 mg.

diazepam	**Injection:** 5 mg/ mL. **Oral liquid:** 2 mg/5 mL. **Rectal solution:** 2.5 mg; 5 mg; 10 mg. **Tablet:** 5 mg; 10 mg.
docusate sodium	**Capsule:** 100 mg. **Oral liquid:** 50 mg/5 mL.
fluoxetine a	**Solid oral dosage form:** 20 mg (as hydrochloride). a >8 years.
haloperidol	**Injection:** 5 mg in 1- mL ampoule. **Oral liquid:** 2 mg/ mL. **Solid oral dosage form:** 0.5 mg; 2mg; 5 mg.
hyoscine butylbromide	**Injection:** 20 mg/ mL.
hyoscine hydrobromide **[c]**	**Injection:** 400 micrograms/ mL; 600 micrograms/ mL. **Transdermal patches:** 1 mg/72 hours.
lactulose **[c]**	**Oral liquid:** 3.1–3.7 g/5 mL.
loperamide	**Solid oral dosage form:** 2 mg.
metoclopramide	**Injection:** 5 mg (hydrochloride)/mL in 2-mL ampoule. **Oral liquid:** 5 mg/5 mL. **Solid oral form:** 10 mg (hydrochloride).
midazolam	**Injection:** 1 mg/ mL; 5 mg/ mL. **Solid oral dosage form:** 7.5 mg; 15 mg. **Oral liquid:** 2mg/ mL **[c].**
ondansetron **[c]** a	**Injection:** 2 mg base/ mL in 2- mL ampoule (as hydrochloride). **Oral liquid:** 4 mg base/5 mL. **Solid oral dosage form:** Eq 4 mg base; Eq 8 mg base. a >1 month.
senna	**Oral liquid:** 7.5 mg/5 mL.
3. ANTIALLERGICS AND MEDICINES USED IN ANAPHYLAXIS	
dexamethasone	**Injection:** 4 mg/ mL in 1- mL ampoule (as disodium phosphate salt).
epinephrine (adrenaline)	**Injection:** 1 mg (as hydrochloride **or** hydrogen tartrate) in 1- mL ampoule.
hydrocortisone	**Powder for injection:** 100 mg (as sodium succinate) in vial.

□ loratadine *	**Oral liquid:** 1 mg/ mL. **Tablet:** 10 mg. **There may be a role for sedating antihistamines for limited indications (EMLc).*
□ prednisolone	**Oral liquid:** 5 mg/ mL **[c]**. **Tablet:** 5 mg; 25 mg.
4. ANTIDOTES AND OTHER SUBSTANCES USED IN POISONINGS	
4.1 Non-specific	
charcoal, activated	**Powder.**
4.2 Specific	
acetylcysteine	**Injection:** 200 mg/ mL in 10- mL ampoule. **Oral liquid:** 10% **[c]**; 20% **[c]**.
atropine	**Injection:** 1 mg (sulfate) in 1- mL ampoule.
calcium gluconate	**Injection:** 100 mg/ mL in 10- mL ampoule.
methylthioninium chloride (methylene blue)	**Injection:** 10 mg/ mL in 10- mL ampoule.
naloxone	**Injection:** 400 micrograms (hydrochloride) in 1- mL ampoule.
penicillamine	**Solid oral dosage form:** 250 mg.
potassium ferric hexacyano-ferrate(II) - $2H_2O$(Prussian blue)	**Powder for oral administration.**
sodium nitrite	**Injection:** 30 mg/ mL in 10- mL ampoule.
sodium thiosulfate	**Injection:** 250 mg/ mL in 50- mL ampoule.
Complementary List	
deferoxamine	***Powder for injection:*** *500 mg (mesilate) in vial.*
dimercaprol	***Injection in oil:*** *50 mg/ mL in 2- mL ampoule.*
fomepizole	***Injection:*** *5 mg/ mL (sulfate) in 20- mL ampoule or 1 g/ mL (base) in 1.5- mL ampoule.*
sodium calcium edetate	***Injection:*** *200 mg/ mL in 5- mL ampoule.*
succimer	***Solid oral dosage form:*** *100 mg.*

5. ANTICONVULSANTS/ANTIEPILEPTICS	
carbamazepine	**Oral liquid:** 100 mg/5 mL. **Tablet (chewable):** 100 mg; 200 mg. **Tablet (scored):** 100 mg; 200 mg.
diazepam	**Gel or rectal solution:** 5 mg/ mL in 0.5 mL; 2- mL; 4- mL tubes.
□ lorazepam	**Parenteral formulation:** 2 mg/ mL in 1- mL ampoule; 4 mg/ mL in 1- mL ampoule.
magnesium sulfate*	**Injection:** 0.5g/ mL in 2- mL ampoule (equivalent to 1 g in 2 mL; 50% weight/volume); 0.5g/ mL in 10- mL ampoule (equivalent to 5 g in 10 mL; 50% weight/volume). * For use in eclampsia and severe pre-eclampsia and not for other convulsant disorders.
midazolam	**Solution for oromucosal administration:** 5 mg/mL; 10 mg/mL **Ampoule*:** 1 mg/ mL; 10 mg/mL *for buccal administration when solution for oromucosal administration is not available
phenobarbital	**Injection:** 200 mg/ mL (sodium). **Oral liquid:** 15 mg/5 mL. **Tablet:** 15 mg to 100 mg.
phenytoin	**Injection:** 50 mg/ mL in 5- mL vial (sodium salt). **Oral liquid:** 25 mg to 30 mg/5 mL.* **Solid oral dosage form:** 25 mg; 50 mg; 100 mg (sodium salt). **Tablet (chewable):** 50 mg. * The presence of both 25 mg/5 mL and 30 mg/5 mL strengths on the same market would cause confusion in prescribing and dispensing and should be avoided.
valproic acid (sodium valproate)	**Oral liquid:** 200 mg/5 mL. **Tablet (crushable):** 100 mg. **Tablet (enteric-coated):** 200 mg; 500 mg (sodium valproate).
Complementary List	
ethosuximide	***Capsule:*** *250 mg.* ***Oral liquid:*** *250 mg/5 mL.*

valproic acid (sodium valproate)	***Injection:*** *100 mg/ mL in 4- mL ampoule; 100 mg/ mL in 10- mL ampoule.*
6. ANTI-INFECTIVE MEDICINES	
6.1 Anthelminthics	
6.1.1 Intestinal anthelminthics	
albendazole	**Tablet (chewable):** 400 mg.
levamisole	**Tablet:** 50 mg; 150 mg (as hydrochloride).
mebendazole	**Tablet (chewable):** 100 mg; 500 mg.
niclosamide	**Tablet (chewable):** 500 mg.
praziquantel	**Tablet:** 150 mg; 600 mg.
pyrantel	**Oral liquid:** 50 mg (as embonate **or** pamoate)/ mL. **Tablet (chewable):** 250 mg (as embonate **or** pamoate).
6.1.2 Antifilarials	
albendazole	**Tablet (chewable):** 400 mg.
diethylcarbamazine	**Tablet:** 50 mg; 100 mg (dihydrogen citrate).
ivermectin	**Tablet (scored):** 3 mg.
6.1.3 Antischistosomals and other antitrematode medicines	
praziquantel	**Tablet:** 600 mg.
triclabendazole	**Tablet:** 250 mg.
Complementary List	
*oxamniquine**	***Capsule:*** *250 mg.* ***Oral liquid:*** *250 mg/5 mL.* ** Oxamniquine is listed for use when praziquantel treatment fails.*
6.2 Antibacterials	
6.2.1 Beta-lactam medicines	
amoxicillin	**Powder for oral liquid:** 125 mg (as trihydrate)/5 mL; 250 mg (as trihydrate)/5 mL **[c]**. **Solid oral dosage form:** 250 mg; 500 mg (as trihydrate).
amoxicillin + clavulanic acid	**Oral liquid:** 125 mg amoxicillin + 31.25 mg clavulanic acid/5 mL AND 250 mg amoxicillin + 62.5 mg clavulanic acid/5 mL **[c]**. **Tablet:** 500 mg (as trihydrate) + 125 mg (as potassium salt).

ampicillin	**Powder for injection:** 500 mg; 1 g (as sodium salt) in vial.
benzathine benzylpenicillin	**Powder for injection:** 900 mg benzylpenicillin (= 1.2 million IU) in 5- mL vial **[c]**; 1.44 g benzylpenicillin (= 2.4 million IU) in 5- mL vial.
benzylpenicillin	**Powder for injection:** 600 mg (= 1 million IU); 3 g (= 5 million IU) (sodium **or** potassium salt) in vial.
cefalexin **[c]**	**Powder for reconstitution with water:** 125 mg/5 mL; 250 mg/5 mL (anhydrous). **Solid oral dosage form:** 250 mg (as monohydrate).
□ cefazolin* a	**Powder for injection:** 1 g (as sodium salt) in vial. * For surgical prophylaxis. a >1 month.
cefixime*	**Capsule:** 400 mg (as trihydrate). * Listed only for single-dose treatment of uncomplicated anogenital gonorrhoea.
ceftriaxone* a	**Powder for injection:** 250 mg; 1 g (as sodium salt) in vial. * Do not administer with calcium and avoid in infants with hyperbilirubinaemia. a >41 weeks corrected gestational age.
□ cloxacillin	**Capsule:** 500 mg; 1 g (as sodium salt). **Powder for injection:** 500 mg (as sodium salt) in vial. **Powder for oral liquid:** 125 mg (as sodium salt)/5 mL.
phenoxymethylpenicillin	**Powder for oral liquid:** 250 mg (as potassium salt)/5 mL. **Tablet:** 250 mg (as potassium salt).
procaine benzylpenicillin*	**Powder for injection:** 1 g (=1 million IU); 3 g (=3 million IU) in vial. * Procaine benzylpenicillin is not recommended as first-line treatment for neonatal sepsis except in settings with high neonatal mortality, when given by trained health workers in cases where hospital care is not achievable.
Complementary List	
cefotaxime **[c]***	***Powder for injection:** 250 mg per vial (as sodium salt).* ** 3rd generation cephalosporin of choice for use in hospitalized neonates.*

ceftazidime	***Powder for injection:*** *250 mg* ***or*** *1 g (as pentahydrate) in vial.*
imipenem + cilastatin**	***Powder for injection:*** *250 mg (as monohydrate) + 250 mg (as sodium salt); 500 mg (as monohydrate) + 500 mg (as sodium salt) in vial.* ** Listed only for the treatment of life-threatening hospital-based infection due to suspected or proven multidrug-resistant infection.* *Meropenem is indicated for the treatment of meningitis and is licensed for use in children over the age of 3 months.*
6.2.2 Other antibacterials	
azithromycin*	**Capsule:** 250 mg; 500 mg (anhydrous). **Oral liquid:** 200 mg/5 mL. * Only listed for single-dose treatment of genital *Chlamydia trachomatis* and of trachoma.
chloramphenicol	**Capsule:** 250 mg. **Oily suspension for injection*:** 0.5 g (as sodium succinate)/ mL in 2- mL ampoule. * Only for the presumptive treatment of epidemic meningitis in children older than 2 years. **Oral liquid:** 150 mg (as palmitate)/5 mL. **Powder for injection:** 1 g (sodium succinate) in vial.
□ ciprofloxacin*	**Oral liquid:** 250 mg/5 mL (anhydrous) **[c]**. **Solution for IV infusion:** 2 mg/ mL (as hyclate) **[c]**. **Tablet:** 250 mg (as hydrochloride). * Square box applies to adults only.
clarithromycin*	**Solid oral dosage form:** 500 mg. * For use in combination regimens for eradication of *H. Pylori* in adults.
doxycycline a	**Oral liquid:** 25 mg/5 mL **[c]**; 50 mg/5 mL (anhydrous) **[c]**. **Solid oral dosage form:** 50 mg **[c]**; 100 mg (as hyclate). a Use in children <8 years only for life-threatening infections when no alternative exists.

□ erythromycin	**Powder for injection:** 500 mg (as lactobionate) in vial. **Powder for oral liquid:** 125 mg/5 mL (as stearate **or** estolate **or** ethyl succinate). **Solid oral dosage form:** 250 mg (as stearate **or** estolate **or** ethyl succinate).
□ gentamicin	**Injection:** 10 mg; 40 mg (as sulfate)/ mL in 2- mL vial.
□ metronidazole	**Injection:** 500 mg in 100- mL vial. **Oral liquid:** 200 mg (as benzoate)/5 mL. **Suppository:** 500 mg; 1 g. **Tablet:** 200 mg to 500 mg.
nitrofurantoin	**Oral liquid:** 25 mg/5 mL **[c]**. **Tablet:** 100 mg.
spectinomycin	**Powder for injection:** 2 g (as hydrochloride) in vial.
sulfamethoxazole + trimethoprim	**Injection:** 80 mg + 16 mg/ mL in 5- mL ampoule; 80 mg + 16 mg/ mL in 10- mL ampoule. **Oral liquid:** 200 mg + 40 mg/5 mL. **Tablet:** 100 mg + 20 mg; 400 mg + 80 mg; 800 mg + 160 mg.
trimethoprim **a**	**Oral liquid:** 50 mg/5 mL **[c]**. **Tablet:** 100 mg; 200 mg. **a** >6 months.
Complementary List	
clindamycin	***Capsule:*** *150 mg (as hydrochloride).* ***Injection:*** *150 mg (as phosphate)/ mL.* ***Oral liquid:*** *75 mg/5 mL (as palmitate)* ***[c]****.*
vancomycin	***Powder for injection:*** *250 mg (as hydrochloride) in vial.*
6.2.3 Antileprosy medicines	
Medicines used in the treatment of leprosy should never be used except in combination. Combination therapy is essential to prevent the emergence of drug resistance. Colour-coded blister packs (MDT blister packs) containing standard two-medicine (paucibacillary leprosy) or three-medicine (multibacillary leprosy) combinations for adult and childhood leprosy should be used. MDT blister packs can be supplied free of charge through WHO.	
clofazimine	**Capsule:** 50 mg; 100 mg.
dapsone	**Tablet:** 25 mg; 50 mg; 100 mg.

rifampicin	**Solid oral dosage form:** 150 mg; 300 mg.
6.2.4 Antituberculosis medicines WHO recommends and endorses the use of fixed-dose combinations and the development of appropriate new fixed-dose combinations, including modified dosage forms, non-refrigerated products and paediatric dosage forms of assured pharmaceutical quality.	
ethambutol	**Oral liquid:** 25 mg/ mL **[c]**. **Tablet:** 100 mg to 400 mg (hydrochloride).
ethambutol + isoniazid	**Tablet:** 400 mg + 150 mg.
ethambutol + isoniazid + pyrazinamide + rifampicin	**Tablet:** 275 mg + 75 mg + 400 mg + 150 mg.
ethambutol + isoniazid + rifampicin	**Tablet:** 275 mg + 75 mg + 150 mg.
isoniazid	**Oral liquid:** 50 mg/5 mL **[c]**. **Tablet:** 100 mg to 300 mg. **Tablet (scored):** 50 mg.
isoniazid + pyrazinamide + rifampicin	**Tablet:** 75 mg + 400 mg + 150 mg. 150 mg + 500 mg + 150 mg **(For intermittent use three times weekly).**
isoniazid + rifampicin	**Tablet:** 75 mg + 150 mg; 150 mg + 300 mg. 60 mg + 60 mg **(For intermittent use three times weekly).** 150 mg + 150 mg **(For intermittent use three times weekly).**
pyrazinamide	**Oral liquid:** 30 mg/ mL **[c]**. **Tablet:** 400 mg. **Tablet (dispersible):** 150 mg. **Tablet (scored):** 150 mg.
rifabutin	**Capsule:** 150 mg.* * For use only in patients with HIV receiving protease inhibitors.
rifampicin	**Oral liquid:** 20 mg/ mL **[c]**. **Solid oral dosage form:** 150 mg; 300 mg.
rifapentine*	**Tablet:** 150 mg *For treatment of latent TB infection (LTBI) only
streptomycin	**Powder for injection:** 1 g (as sulfate) in vial.
Complementary List	

Reserve second-line drugs for the treatment of multidrug-resistant tuberculosis (MDR-TB) should be used in specialized centres adhering to WHO standards for TB control.	
amikacin	***Powder for injection:*** *100 mg; 500 mg; 1 g (as sulfate) in vial.*
bedaquiline	***Tablet:*** *100 mg*
capreomycin	***Powder for injection:*** *1 g (as sulfate) in vial.*
*cycloserine**	***Solid oral dosage form:*** *250 mg.* **Terizidone may be an alternative*
delamanid	***Tablet:*** *50 mg*
*ethionamide**	***Tablet:*** *125 mg; 250 mg.* **Protionamide may be an alternative.*
kanamycin	***Powder for injection:*** *1 g (as sulfate) in vial.*
*levofloxacin**	***Tablet:*** *250mg; 500 mg; 750 mg.* ** Ofloxacin and moxifloxacin may be alternatives based on availability and programme considerations.*
linezolid	***Injection for intravenous administration:*** *2 mg/ mL in 300 mL bag* ***Powder for oral liquid****: 100 mg/5 mL,* ***Tablet:*** *400 mg; 600 mg*
p-aminosalicylic acid	***Granules:*** *4 g in sachet.* ***Tablet:*** *500 mg.*
streptomycin ***[c]***	***Powder for injection:*** *1 g (as sulfate) in vial.*
6.3 Antifungal medicines	
amphotericin B	**Powder for injection:** 50 mg in vial (as sodium deoxycholate **or** liposomal complex).
clotrimazole	**Vaginal cream:** 1%; 10%. **Vaginal tablet:** 100 mg; 500 mg.
□ fluconazole	**Capsule:** 50 mg. **Injection:** 2 mg/ mL in vial. **Oral liquid:** 50 mg/5 mL.
flucytosine	**Capsule:** 250 mg. **Infusion:** 2.5 g in 250 mL.
griseofulvin	**Oral liquid:** 125 mg/5 mL **[c]**. **Solid oral dosage form:** 125 mg; 250 mg.

nystatin	**Lozenge:** 100 000 IU. **Oral liquid:** 50 mg/5 mL **[c]**; 100 000 IU/ mL **[c]**. **Pessary:** 100 000 IU. **Tablet:** 100 000 IU; 500 000 IU.
Complementary List	
potassium iodide	***Saturated solution.***
6.4 Antiviral medicines	
6.4.1 Antiherpes medicines	
□ aciclovir	**Oral liquid:** 200 mg/5 mL **[c]**. **Powder for injection:** 250 mg (as sodium salt) in vial. **Tablet:** 200 mg.
6.4.2 Antiretrovirals	
Based on current evidence and experience of use, medicines in the following three classes of antiretrovirals are included as essential medicines for treatment and prevention of HIV (prevention of mother-to-child transmission and post-exposure prophylaxis). WHO emphasizes the importance of using these products in accordance with global and national guidelines. WHO recommends and endorses the use of fixed-dose combinations and the development of appropriate new fixed-dose combinations, including modified dosage forms, non-refrigerated products and paediatric dosage forms of assured pharmaceutical quality. Scored tablets can be used in children and therefore can be considered for inclusion in the listing of tablets, provided that adequate quality products are available.	
6.4.2.1 Nucleoside/Nucleotide reverse transcriptase inhibitors	
abacavir (ABC)	**Oral liquid:** 100 mg (as sulfate)/5 mL. **Tablet:** 300 mg (as sulfate).
lamivudine (3TC)	**Oral liquid:** 50 mg/5 mL. **Tablet:** 150 mg.
stavudine (d4T)	**Capsule:** 15 mg; 20 mg; 30 mg. **Powder for oral liquid:** 5 mg/5 mL.
tenofovir disoproxil fumarate (TDF)	**Tablet:** 300 mg (tenofovir disoproxil fumarate – equivalent to 245 mg tenofovir disoproxil).
zidovudine (ZDV **or** AZT)	**Capsule:** 100 mg; 250 mg. **Oral liquid:** 50 mg/5 mL. **Solution for IV infusion injection:** 10 mg/ mL in 20- mL vial. **Tablet:** 300 mg.
6.4.2.2 Non-nucleoside reverse transcriptase inhibitors	

efavirenz (EFV **or** EFZ) [a]	**Capsule:** 50 mg; 100 mg; 200 mg. **Tablet:** 200 mg (scored); 600 mg. [a] >3 years **or** >10 kg weight.
nevirapine (NVP)	**Oral liquid:** 50 mg/5 mL. **Tablet:** 50 mg (dispersible); 200 mg.
6.4.2.3 Protease inhibitors	
Selection of protease inhibitor(s) from the Model List will need to be determined by each country after consideration of international and national treatment guidelines and experience. Ritonavir is recommended for use in combination as a pharmacological booster, and not as an antiretroviral in its own right. All other protease inhibitors should be used in boosted forms (e.g. with ritonavir).	
atazanavir [a]	**Solid oral dosage form:** 100 mg; 150 mg; 300 mg (as sulfate). [a] >25 kg.
darunavir [a]	**Tablet:** 75 mg; 400 mg; 600 mg; 800 mg [a] >3 years
lopinavir + ritonavir (LPV/r)	**Oral liquid:** 400 mg + 100 mg/5 mL. **Tablet (heat stable):** 100 mg + 25 mg; 200 mg + 50 mg.
ritonavir	**Oral liquid:** 400 mg/5 mL. **Tablet (heat stable):** 25 mg; 100 mg.
saquinavir (SQV) [a]	**Solid oral dosage form:** 200 mg; 500 mg (as mesilate). [a] >25 kg.
FIXED-DOSE COMBINATIONS	
abacavir + lamivudine	**Tablet (dispersible, scored):** 60 mg (as sulfate) + 30 mg
efavirenz + emtricitabine* + tenofovir	**Tablet:** 600 mg + 200 mg + 300 mg (disoproxil fumarate equivalent to 245 mg tenofovir disoproxil). *Emtricitabine (FTC) is an acceptable alternative to 3TC, based on knowledge of the pharmacology, the resistance patterns and clinical trials of antiretrovirals.
emtricitabine* + tenofovir	**Tablet:** 200 mg + 300 mg (disoproxil fumarate equivalent to 245 mg tenofovir disoproxil). *Emtricitabine (FTC) is an acceptable alternative to 3TC, based on knowledge of the pharmacology, the resistance patterns and clinical trials of antiretrovirals.

lamivudine + nevirapine + stavudine	**Tablet:** 150 mg + 200 mg + 30 mg. **Tablet (dispersible):** 30 mg + 50 mg + 6 mg [c].
lamivudine + nevirapine + zidovudine	**Tablet:** 30 mg + 50 mg + 60 mg [c]; 150 mg + 200 mg + 300 mg.
lamivudine + zidovudine	**Tablet:** 30 mg + 60 mg [c]; 150 mg + 300 mg.
6.4.3 Other antivirals	
oseltamivir*	**Capsule:** 30 mg; 45 mg; 75 mg (as phosphate). **Oral powder:** 12 mg/ mL. * potentially severe or complicated illness due to confirmed or suspected influenza virus infection in accordance with WHO treatment guidelines.
ribavirin*	**Injection for intravenous administration:** 800 mg and 1 g in 10- mL phosphate buffer solution. **Solid oral dosage form:** 200 mg; 400 mg; 600 mg. * For the treatment of viral haemorrhagic fevers
valganciclovir*	**Tablet:** 450 mg. *For the treatment of cytomegalovirus retinitis (CMVr).
6.4.4 Antihepatitis medicines	
6.4.4.1 Medicines for hepatitis B	
6.4.4.1.1 Nucleoside/Nucleotide reverse transcriptase inhibitors	
entecavir	**Oral liquid:** 0.05 mg/ mL **Tablet:** 0.5 mg; 1 mg
tenofovir disoproxil fumarate (TDF)	**Tablet:** 300 mg (tenofovir disoproxil fumarate – equivalent to 245 mg tenofovir disoproxil).
6.4.4.2 Medicines for hepatitis C	
Based on current evidence, medicines in the following classes of direct acting antiviral medicines are included as essential medicines for treatment of hepatitis C virus infection. WHO guidelines recommend specific combination therapy utilizing medicines from different classes.	
6.4.4.2.1 Nucleotide polymerase inhibitors	
sofosbuvir	**Tablet:** 400 mg
6.4.4.2.2 Protease inhibitors	
simeprevir	**Capsule** 150 mg
6.4.4.2.3 NS5A inhibitors	
daclatasvir	**Tablet:** 30 mg; 60 mg (as hydrochloride)
6.4.4.2.4 Non-nucleoside polymerase inhibitors	

dasabuvir	**Tablet:** 250 mg
6.4.4.2.5 Other antivirals	
ribavirin*	**Injection for intravenous administration:** 800 mg and 1 g in 10- mL phosphate buffer solution. **Solid oral dosage form:** 200 mg; 400 mg; 600 mg. * For the treatment of hepatitis C, in combination with peginterferon and/or direct acting anti-viral medicines
Complementary List	
*pegylated interferon alfa (2a or 2b) **	***Vial or prefilled syringe:*** *180 micrograms (peginterferon alfa-2a),* *80 microgram, 100 microgram (peginterferon alfa-2b).* ** To be used in combination with ribavirin.*
FIXED-DOSE COMBINATIONS *Alternative combinations of DAAs from different pharmacological classes are possible*	
ledipasvir + sofosbuvir	**Tablet:** 90 mg + 400 mg.
ombitasvir + paritaprevir + ritonavir	**Tablet:** 12.5 mg + 75 mg + 50 mg
6.5 Antiprotozoal medicines	
6.5.1 Antiamoebic and antigiardiasis medicines	
diloxanide a	**Tablet:** 500 mg (furoate). a >25 kg.
□ metronidazole	**Injection:** 500 mg in 100- mL vial. **Oral liquid:** 200 mg (as benzoate)/5 mL. **Tablet:** 200 mg to 500 mg.
6.5.2 Antileishmaniasis medicines	
amphotericin B	**Powder for injection:** 50 mg in vial (as sodium deoxycholate **or** liposomal complex).
miltefosine	**Solid oral dosage form:** 10 mg; 50 mg.
paromomycin	**Solution for intramuscular injection:** 750 mg of paromomycin base (as the sulfate).
sodium stibogluconate **or** meglumine antimoniate	**Injection:** 100 mg/ mL, 1 vial = 30 mL **or** 30%, equivalent to approximately 8.1% antimony (pentavalent) in 5- mL ampoule.
6.5.3 Antimalarial medicines	
6.5.3.1 For curative treatment	

Medicines for the treatment of *P. falciparum* malaria cases should be used in combination. The list currently recommends combinations according to treatment guidelines. WHO recognizes that not all of the fixed dose combinations (FDCs) in the WHO treatment guidelines exist, and encourages their development and rigorous testing. WHO also encourages development and testing of rectal dosage formulations.	
amodiaquine*	**Tablet:** 153 mg **or** 200 mg (as hydrochloride). * To be used in combination with artesunate 50 mg.
artemether*	**Oily injection:** 80 mg/ mL in 1- mL ampoule. * For use in the management of severe malaria.
artemether + lumefantrine*	**Tablet:** 20 mg + 120 mg. **Tablet (dispersible):** 20 mg + 120 mg **[c]**. * Not recommended in the first trimester of pregnancy **or** in children below 5 kg.
artesunate*	**Injection:** ampoules, containing 60 mg anhydrous artesunic acid with a separate ampoule of 5% sodium bicarbonate solution. For use in the management of severe malaria. **Rectal dosage form:** 50 mg **[c]**; 200 mg capsules (for pre-referral treatment of severe malaria only; patients should be taken to an appropriate health facility for follow-up care) **[c]**. **Tablet:** 50 mg. * To be used in combination with either amodiaquine, mefloquine **or** sulfadoxine + pyrimethamine.
artesunate + amodiaquine*	**Tablet:** 25 mg + 67.5 mg; 50 mg + 135 mg; 100 mg + 270 mg. * Other combinations that deliver the target doses required such as 153 mg **or** 200 mg (as hydrochloride) with 50 mg artesunate can be alternatives.
artesunate + mefloquine	**Tablet:** 25 mg + 55 mg; 100 mg + 220 mg.
chloroquine*	**Oral liquid:** 50 mg (as phosphate **or** sulfate)/5 mL. **Tablet:** 100 mg; 150 mg (as phosphate **or** sulfate). * For use only for the treatment of *P.vivax* infection.
doxycycline*	**Capsule:** 100 mg (as hydrochloride **or** hyclate). **Tablet (dispersible):** 100 mg (as monohydrate). * For use only in combination with quinine.
mefloquine*	**Tablet:** 250 mg (as hydrochloride). * To be used in combination with artesunate 50 mg.

primaquine*	**Tablet:** 7.5 mg; 15 mg (as diphosphate). * Only for use to achieve radical cure of *P.vivax* and *P.ovale* infections, given for 14 days.
quinine*	**Injection:** 300 mg quinine hydrochloride/ mL in 2- mL ampoule. **Tablet:** 300 mg (quinine sulfate) **or** 300 mg (quinine bisulfate). * For use only in the management of severe malaria, and should be used in combination with doxycycline.
sulfadoxine + pyrimethamine*	**Tablet:** 500 mg + 25 mg. * Only in combination with artesunate 50 mg.
6.5.3.2 For prophylaxis	
chloroquine*	**Oral liquid:** 50 mg (as phosphate **or** sulfate)/5 mL. **Tablet:** 150 mg (as phosphate **or** sulfate). * For use only in central American regions, for *P.vivax* infections.
doxycycline a	**Solid oral dosage form:** 100 mg (as hydrochloride **or** hyclate). a >8 years.
mefloquine a	**Tablet:** 250 mg (as hydrochloride). a >5 kg **or** >3 months.
proguanil*	**Tablet:** 100 mg (as hydrochloride). * For use only in combination with chloroquine.
6.5.4 Antipneumocystosis and antitoxoplasmosis medicines	
pyrimethamine	**Tablet:** 25 mg.
sulfadiazine	**Tablet:** 500 mg.
sulfamethoxazole + trimethoprim	**Injection:** 80 mg + 16 mg/ mL in 5- mL ampoule; 80 mg + 16 mg/ mL in 10- mL ampoule. **Oral liquid:** 200 mg + 40 mg/5 mL **[c]**. **Tablet:** 100 mg + 20 mg; 400 mg + 80 mg **[c]**.
Complementary List	
pentamidine	***Tablet:*** *200 mg; 300 mg (as isethionate).*
6.5.5 Antitrypanosomal medicines	
6.5.5.1 African trypanosomiasis	
Medicines for the treatment of 1st stage African trypanosomiasis	

pentamidine*	**Powder for injection:** 200 mg (as isetionate) in vial. * To be used for the treatment of *Trypanosoma brucei gambiense* infection.
suramin sodium*	**Powder for injection:** 1 g in vial. * To be used for the treatment of the initial phase of *Trypanosoma brucei rhodesiense* infection.
Medicines for the treatment of 2nd stage African trypanosomiasis	
eflornithine*	**Injection:** 200 mg (hydrochloride)/ mL in 100- mL bottle. * To be used for the treatment of *Trypanosoma brucei gambiense* infection.
melarsoprol	**Injection:** 3.6% solution, 5- mL ampoule (180 mg of active compound).
nifurtimox*	**Tablet:** 120 mg. * Only to be used in combination with eflornithine, for the treatment of *Trypanosoma brucei gambiense* infection.
Complementary List **[c]**	
melarsoprol	***Injection:*** *3.6% solution in 5- mL ampoule (180 mg of active compound).*
6.5.5.2 American trypanosomiasis	
benznidazole	**Tablet:** 12.5 mg **[c]**;100 mg. **Tablet (scored):** 50 mg.
nifurtimox	**Tablet:** 30 mg; 120 mg; 250 mg.
7. ANTIMIGRAINE MEDICINES	
7.1 For treatment of acute attack	
acetylsalicylic acid	**Tablet:** 300 mg to 500 mg.
ibuprofen **[c]**	**Tablet:** 200 mg; 400 mg.
paracetamol	**Oral liquid:** 125 mg/5 mL **[c]**. **Tablet:** 300 mg to 500 mg.
7.2 For prophylaxis	
□ propranolol	**Tablet:** 20 mg; 40 mg (hydrochloride).
8. ANTINEOPLASTICS AND IMMUNOSUPPRESSIVES Medicines listed below should be used according to protocols for treatment of the diseases.	
8.1 Immunosuppressive medicines	
Complementary List	

azathioprine	***Powder for injection:*** *100 mg (as sodium salt) in vial.* ***Tablet (scored):*** *50 mg.*
ciclosporin	***Capsule:*** *25 mg.* ***Concentrate for injection:*** *50 mg/ mL in 1- mL ampoule for organ transplantation.*
8.2 Cytotoxic and adjuvant medicines	
Complementary List	
all-trans retinoid acid (ATRA)	***Capsule:*** *10 mg.* *– Acute promyelocytic leukaemia.*
allopurinol **[c]**	***Tablet:*** *100 mg; 300 mg.*
asparaginase	***Powder for injection:*** *10 000 IU in vial.* *– Acute lymphoblastic leukaemia.*
bendamustine	***Injection:*** *45 mg/0.5 mL; 180 mg/2 mL.* *– Chronic lymphocytic leukaemia* *– Follicular lymphoma*
bleomycin	***Powder for injection:*** *15 mg (as sulfate) in vial.* *– Hodgkin lymphoma* *– Kaposi sarcoma* *– Ovarian germ cell tumour* *– Testicular germ cell tumour*
calcium folinate	***Injection:*** *3 mg/ mL in 10- mL ampoule.* ***Tablet:*** *15 mg.* *– Early stage colon cancer* *– Early stage rectal cancer* *– Gestational trophoblastic neoplasia* *– Metastatic colorectal cancer* *– Osteosarcoma* *– Burkitt lymphoma*
capecitabine	***Tablet:*** *150 mg; 500 mg.* *– Early stage colon cancer* *– Early stage rectal cancer* *– Metastatic breast cancer* *– Metastatic colorectal cancer*

carboplatin	***Injection:*** *50 mg/5 mL; 150 mg/15 mL; 450 mg/45 mL; 600 mg/60 mL.* – *Early stage breast cancer* – *Epithelial ovarian cancer* – *Nasopharyngeal cancer* – *Non-small cell lung cancer* – *Osteosarcoma* – *Retinoblastoma*
chlorambucil	***Tablet:*** *2 mg.* – *Chronic lymphocytic leukaemia.*
cisplatin	***Injection:*** *50 mg/50 mL; 100 mg/100 mL.* – *Cervical cancer (as a radio-sensitizer)* – *Head and neck cancer (as a radio-sensitizer)* – *Nasopharyngeal cancer (as a radio-sensitizer)* – *Non-small cell lung cancer* – *Osteosarcoma* – *Ovarian germ cell tumour* – *Testicular germ cell tumour*
cyclophosphamide	***Powder for injection:*** *500 mg in vial.* ***Tablet:*** *25 mg.* – *Chronic lymphocytic leukaemia* – *Diffuse large B-cell lymphoma* – *Early stage breast cancer* – *Gestational trophoblastic neoplasia* – *Hodgkin lymphoma* – *Follicular lymphoma* – *Rhabdomyosarcoma* – *Ewing sarcoma* – *Acute lymphoblastic leukaemia* – *Burkitt lymphoma* – *Metastatic breast cancer.*
cytarabine	***Powder for injection:*** *100 mg in vial.* – *Acute myelogenous leukaemia* – *Acute lymphoblastic leukaemia* – *Acute promyelocytic leukaemia* – *Burkitt lymphoma.*
dacarbazine	***Powder for injection:*** *100 mg in vial.* – *Hodgkin lymphoma*
dactinomycin	***Powder for injection:*** *500 micrograms in vial.* – *Gestational trophoblastic neoplasia* – *Rhabdomyosarcoma* – *Wilms tumour*

daunorubicin	***Powder for injection:*** *50 mg (hydrochloride) in vial.* – *Acute lymphoblastic leukaemia* – *Acute myelogenous leukaemia* – *Acute promyelocytic leukaemia*
docetaxel	***Injection:*** *20 mg/ mL; 40 mg/ mL.* – *Early stage breast cancer* – *Metastatic breast cancer* – *Metastatic prostate cancer*
doxorubicin	***Powder for injection:*** *10 mg; 50 mg (hydrochloride) in vial.* – *Diffuse large B-cell lymphoma* – *Early stage breast cancer* – *Hodgkin lymphoma* – *Kaposi sarcoma* – *Follicular lymphoma* – *Metastatic breast cancer* – *Osteosarcoma* – *Ewing sarcoma* – *Acute lymphoblastic leukaemia* – *Wilms tumour* – *Burkitt lymphoma*
etoposide	***Capsule:*** *100 mg.* ***Injection:*** *20 mg/ mL in 5- mL ampoule.* – *Testicular germ cell tumour* – *Gestational trophoblastic neoplasia* – *Hodgkin lymphoma* – *Non-small cell lung cancer* – *Ovarian germ cell tumour* – *Retinoblastoma* – *Ewing sarcoma* – *Acute lymphoblastic leukaemia* – *Burkitt lymphoma*
fludarabine	***Powder for injection:*** *50 mg (phosphate) in vial.* ***Tablet:*** *10 mg* – *Chronic lymphocytic leukaemia.*
fluorouracil	***Injection:*** *50 mg/ mL in 5- mL ampoule.* – *Early stage breast cancer* – *Early stage colon cancer* – *Early stage rectal cancer* – *Metastatic colorectal cancer* – *Nasopharyngeal cancer.*

filgrastim	***Injection:*** *120 micrograms/0.2 mL; 300 micrograms/0.5 mL; 480 micrograms/0.8 mL in pre-filled syringe 300 micrograms/mL in 1- mL vial, 480 mg/1.6 mL in 1.6- mL vial.* – *Primary prophylaxis in patients at high risk for developing febrile neutropenia associated with myelotoxic chemotherapy.* – *Secondary prophylaxis for patients who have experienced neutropenia following prior myelotoxic chemotherapy* – *To facilitate administration of dose dense chemotherapy regimens*
gemcitabine	***Powder for injection:*** *200 mg in vial, 1 g in vial.* – *Epithelial ovarian cancer* – *Non-small cell lung cancer*
hydroxycarbamide	***Solid oral dosage form:*** *200 mg; 250 mg; 300 mg; 400 mg; 500 mg; 1 g.* – *Chronic myeloid leukaemia.*
ifosfamide	***Powder for injection:*** *500 mg vial**;** 1-g vial; 2-g vial.* – *Testicular germ cell tumour* – *Ovarian germ cell tumour* – *Osteosarcoma* – *Rhabdomyosarcoma* – *Ewing sarcoma*
imatinib	***Tablet:*** *100 mg; 400 mg.* – *Chronic myeloid leukaemia* – *Gastrointestinal stromal tumour*
irinotecan	***Injection:*** *40 mg/2 mL in 2- mL vial; 100 mg/5 mL in 5- mL vial; 500 mg/25 mL in 25- mL vial.* – *Metastatic colorectal cancer.*
mercaptopurine	***Tablet:*** *50 mg.* – *Acute lymphoblastic leukaemia* – *Acute promyelocytic leukaemia.*
mesna	***Injection:*** *100 mg/ mL in 4- mL and 10- mL ampoules.* ***Tablet:*** *400 mg; 600 mg.* – *Testicular germ cell tumour* – *Ovarian germ cell tumour* – *Osteosarcoma* – *Rhabdomyosarcoma* – *Ewing sarcoma.*

methotrexate	***Powder for injection:*** *50 mg (as sodium salt) in vial.* ***Tablet:*** *2.5 mg (as sodium salt).* – *Early stage breast cancer* – *Gestational trophoblastic neoplasia* – *Osteosarcoma* – *Acute lymphoblastic leukaemia* – *Acute promyelocytic leukaemia*
oxaliplatin	***Injection:*** *50 mg/10 mL in 10- mL vial; 100 mg/20 mL in 20- mL vial; 200 mg/40 mL in 40- mL vial.* ***Powder for injection:*** *50 mg, 100 mg in vial.* – *Early stage colon cancer* – *Metastatic colorectal cancer*
paclitaxel	***Powder for injection:*** *6 mg/ mL.* – *Epithelial ovarian cancer* – *Early stage breast cancer* – *Metastatic breast cancer* – *Kaposi sarcoma* – *Nasopharyngeal cancer* – *Non-small cell lung cancer* – *Ovarian germ cell tumour*
procarbazine	***Capsule:*** *50 mg (as hydrochloride).*
rituximab	***Injection:*** *100 mg/10 mL in 10- mL vial; 500 mg/50 mL in 50- mL vial.* – *Diffuse large B-cell lymphoma* – *Chronic lymphocytic leukaemia* – *Follicular lymphoma.*
tioguanine ***[c]***	***Solid oral dosage form:*** *40 mg.* – *Acute lymphoblastic leukaemia.*
trastuzumab	***Powder for injection:*** *60 mg; 150 mg; 440 mg in vial* – *Early stage HER2 positive breast cancer* – *Metastatic HER2 positive breast cancer.*
vinblastine	***Powder for injection:*** *10 mg (sulfate) in vial.* – *Hodgkin lymphoma* – *Kaposi sarcoma.* – *Testicular germ cell tumour* – *Ovarian germ cell tumour*

vincristine	***Powder for injection:*** *1 mg; 5 mg (sulfate) in vial.* – *Diffuse large B-cell lymphoma* – *Gestational trophoblastic neoplasia* – *Hodgkin lymphoma* – *Kaposi sarcoma* – *Follicular lymphoma* – *Retinoblastoma* – *Rhabdomyosarcoma* – *Ewing sarcoma* – *Acute lymphoblastic leukaemia* – *Wilms tumour* – *Burkitt lymphoma.*
vinorelbine	***Injection:*** *10 mg/mL in 1- mL vial; 50 mg/5 mL in 5- mL vial.* – *Non-small cell lung cancer* – *Metastatic breast cancer*
8.3 Hormones and antihormones	
Complementary List	
□ *anastrozole*	***Tablet:*** *1 mg.* – *Early stage breast cancer* – *Metastatic breast cancer.*
□ *bicalutamide*	***Tablet:*** *50 mg.* – *Metastatic prostate cancer.*
dexamethasone	***Injection:*** *4 mg/ mL in 1- mL ampoule (as disodium phosphate salt).* ***Oral liquid:*** *2 mg/5 mL* ***[c]****.* – *Acute lymphoblastic leukaemia.*
□ *leuprorelin*	***Dose form*** – *Early stage breast cancer* – *Metastatic prostate cancer*
hydrocortisone	***Powder for injection:*** *100 mg (as sodium succinate) in vial.* – *Acute lymphoblastic leukaemia.*
methylprednisolone ***[c]***	***Injection:*** *40 mg/ mL (as sodium succinate) in 1- mL single-dose vial and 5- mL multi-dose vials; 80 mg/ mL (as sodium succinate) in 1- mL single-dose vial.* – *Acute lymphoblastic leukamia.*

□ *prednisolone*	***Oral liquid:*** *5 mg/ mL* **[c]**. ***Tablet:*** *5 mg; 25 mg.* – *Chronic lymphocytic leukaemia* – *Diffuse large B-cell lymphoma* – *Hodgkin lymphoma* – *Follicular lymphoma* – *Acute lymphoblastic leukaemia* – *Burkitt lymphoma*
tamoxifen	***Tablet:*** *10 mg; 20 mg (as citrate).* – *Early stage breast cancer* – *Metastatic breast cancer*
9. ANTIPARKINSONISM MEDICINES	
□ biperiden	**Injection:** 5 mg (lactate) in 1- mL ampoule. **Tablet:** 2 mg (hydrochloride).
levodopa + □ carbidopa	**Tablet:** 100 mg + 10 mg; 100 mg + 25 mg; 250 mg + 25 mg
10. MEDICINES AFFECTING THE BLOOD	
10.1 Antianaemia medicines	
ferrous salt	**Oral liquid:** equivalent to 25 mg iron (as sulfate)/ mL. **Tablet:** equivalent to 60 mg iron.
ferrous salt + folic acid	**Tablet:** equivalent to 60 mg iron + 400 micrograms folic acid (nutritional supplement for use during pregnancy).
folic acid	**Tablet:** 400 micrograms*; 1 mg; 5 mg. *periconceptual use for prevention of first occurrence of neural tube defects
hydroxocobalamin	**Injection:** 1 mg (as acetate, as hydrochloride **or** as sulfate) in 1- mL ampoule.
10.2 Medicines affecting coagulation	
□ enoxaparin*	**Injection: ampoule or pre-filled syringe** 20 mg/0.2 mL; 40 mg/0.4 mL; 60 mg/0.6 mL; 80 mg/0.8 mL; 100 mg/1 mL; 120 mg/0.8 mL; 150 mg/1 mL *Alternatives are limited to nadroparin and dalteparin
heparin sodium	**Injection:** 1000 IU/ mL; 5000 IU/ mL; 20 000 IU/ mL in 1- mL ampoule.

phytomenadione	**Injection:** 1 mg/ mL **[c]**; 10 mg/ mL in 5- mL ampoule. **Tablet:** 10 mg.
protamine sulfate	**Injection:** 10 mg/ mL in 5- mL ampoule.
tranexamic acid	**Injection:** 100 mg/ mL in 10- mL ampoule.
◻ warfarin	**Tablet:** 1 mg; 2 mg; 5 mg (sodium salt).
Complementary List [c]	
desmopressin	***Injection**: 4 micrograms/ mL (as acetate) in 1- mL ampoule.* ***Nasal spray:** 10 micrograms (as acetate) per dose*
heparin sodium	***Injection:** 1000 IU/ mL; 5000 IU/ mL in 1- mL ampoule.*
protamine sulfate	***Injection:** 10 mg/ mL in 5- mL ampoule.*
◻ *warfarin*	***Tablet:** 0.5 mg; 1 mg; 2 mg; 5 mg (sodium salt).*
10.3 Other medicines for haemoglobinopathies	
Complementary List	
*deferoxamine**	***Powder for injection:** 500 mg (mesilate) in vial.* ** Deferasirox oral form may be an alternative, depending on cost and availability.*
hydroxycarbamide	***Solid oral dosage form:** 200 mg; 500 mg; 1 g.*
11. BLOOD PRODUCTS OF HUMAN ORIGIN AND PLASMA SUBSTITUTES	
11.1 Blood and blood components	
In accordance with the World Health Assembly resolution WHA63.12, WHO recognizes that achieving self-sufficiency, unless special circumstances preclude it, in the supply of safe blood components based on voluntary, non-remunerated blood donation, and the security of that supply are important national goals to prevent blood shortages and meet the transfusion requirements of the patient population. All preparations should comply with the WHO requirements.	
fresh–frozen plasma	
platelets	
red blood cells	
whole blood	
11.2 Plasma-derived medicines	
All human plasma-derived medicines should comply with the WHO requirements.	
11.2.1 Human immunoglobulins	
anti-D immunoglobulin	**Injection:** 250 micrograms in single-dose vial.
Anti-rabies immunoglobulin	**Injection:** 150 IU/ mL in vial.
Anti-tetanus immunoglobulin	**Injection:** 500 IU in vial.
Complementary List	

normal immunoglobulin	***Intramuscular administration:*** *16% protein solution.** ***Intravenous administration:*** *5%; 10% protein solution.*** ***Subcutaneous administration:*** *15%; 16% protein solution.** ** Indicated for primary immune deficiency.* ***Indicated for primary immune deficiency and Kawasaki disease.*
11.2.2 Blood coagulation factors	
Complementary List	
□ coagulation factor VIII	***Powder for injection:*** *500 IU/vial.*
□ coagulation factor IX	***Powder for injection:*** *500 IU/vial, 1000 IU/vial.*
11.3 Plasma substitutes	
□ dextran 70*	**Injectable solution:** 6%. * Polygeline, injectable solution, 3.5% is considered as equivalent.
12. CARDIOVASCULAR MEDICINES	
12.1 Antianginal medicines	
□ bisoprolol*	**Tablet:** 1.25 mg; 5 mg. * □ includes metoprolol and carvedilol as alternatives.
glyceryl trinitrate	**Tablet (sublingual):** 500 micrograms.
□ isosorbide dinitrate	**Tablet (sublingual):** 5 mg.
verapamil	**Tablet:** 40 mg; 80 mg (hydrochloride).
12.2 Antiarrhythmic medicines	
□ bisoprolol*	**Tablet:** 1.25 mg; 5 mg. * □ includes metoprolol and carvedilol as alternatives.
digoxin	**Injection:** 250 micrograms/ mL in 2- mL ampoule. **Oral liquid:** 50 micrograms/ mL. **Tablet:** 62.5 micrograms; 250 micrograms.
epinephrine (adrenaline)	**Injection:** 100 micrograms/ mL (as acid tartrate **or** hydrochloride) in 10- mL ampoule.
lidocaine	**Injection:** 20 mg (hydrochloride)/ mL in 5- mL ampoule.

verapamil	**Injection:** 2.5 mg (hydrochloride)/ mL in 2- mL ampoule. **Tablet:** 40 mg; 80 mg (hydrochloride).
Complementary List	
amiodarone	***Injection:*** *50 mg/ mL in 3- mL ampoule (hydrochloride).* ***Tablet:*** *100 mg; 200 mg; 400 mg (hydrochloride).*
12.3 Antihypertensive medicines	
☐ amlodipine	**Tablet:** 5 mg (as maleate, mesylate **or** besylate).
☐ bisoprolol*	**Tablet:** 1.25 mg; 5 mg. * includes atenolol, metoprolol and carvedilol as alternatives. Atenolol should not be used as a first-line agent in uncomplicated hypertension in patients >60 years
☐ enalapril	**Tablet:** 2.5 mg; 5 mg (as hydrogen maleate).
hydralazine*	**Powder for injection:** 20 mg (hydrochloride) in ampoule. **Tablet:** 25 mg; 50 mg (hydrochloride). * Hydralazine is listed for use only in the acute management of severe pregnancy-induced hypertension. Its use in the treatment of essential hypertension is not recommended in view of the evidence of greater efficacy and safety of other medicines.
☐ hydrochlorothiazide	**Oral liquid:** 50 mg/5 mL. **Solid oral dosage form:** 12.5 mg; 25 mg.
methyldopa*	**Tablet:** 250 mg. * Methyldopa is listed for use only in the management of pregnancy-induced hypertension. Its use in the treatment of essential hypertension is not recommended in view of the evidence of greater efficacy and safety of other medicines.
Complementary List	
sodium nitroprusside	***Powder for infusion:*** *50 mg in ampoule.*

12.4 Medicines used in heart failure	
□ bisoprolol*	**Tablet:** 1.25 mg; 5 mg. *□ includes metoprolol and carvedilol as alternatives.
digoxin	**Injection:** 250 micrograms/ mL in 2- mL ampoule. **Oral liquid:** 50 micrograms/ mL. **Tablet:** 62.5 micrograms; 250 micrograms.
□ enalapril	**Tablet:** 2.5 mg; 5 mg (as hydrogen maleate).
□ furosemide	**Injection:** 10 mg/ mL in 2- mL ampoule. **Oral liquid:** 20 mg/5 mL **[c]**. **Tablet:** 40 mg.
□ hydrochlorothiazide	**Oral liquid:** 50 mg/5 mL. **Solid oral dosage form:** 25 mg.
spironolactone	**Tablet:** 25 mg.
Complementary List	
dopamine	***Injection:*** *40 mg/ mL (hydrochloride) in 5- mL vial.*
12.5 Antithrombotic medicines	
12.5.1 Anti-platelet medicines	
acetylsalicylic acid	**Tablet:** 100 mg.
clopidogrel	**Tablet:** 75 mg; 300 mg
12.5.2 Thrombolytic medicines	
Complementary List	
streptokinase	***Powder for injection:*** *1.5 million IU in vial.*
12.6 Lipid-lowering agents	
□ simvastatin*	**Tablet:** 5 mg; 10 mg; 20 mg; 40 mg. * For use in high-risk patients.
13. DERMATOLOGICAL MEDICINES (topical)	
13.1 Antifungal medicines	
□ miconazole	**Cream or ointment:** 2% (nitrate).
selenium sulfide	**Detergent-based suspension:** 2%.
sodium thiosulfate	**Solution:** 15%.
terbinafine	**Cream:** 1% **or Ointment:** 1% terbinafine hydrochloride.

13.2 Anti-infective medicines	
mupirocin	**Cream (as mupirocin calcium):** 2%. **Ointment:** 2%.
potassium permanganate	**Aqueous solution:** 1:10 000.
silver sulfadiazine [a]	**Cream:** 1%. [a] >2 months.
13.3 Anti-inflammatory and antipruritic medicines	
□ betamethasone [a]	**Cream or ointment:** 0.1% (as valerate). [a] Hydrocortisone preferred in neonates.
□ calamine	**Lotion.**
□ hydrocortisone	**Cream or ointment:** 1% (acetate).
13.4 Medicines affecting skin differentiation and proliferation	
benzoyl peroxide	**Cream or lotion:** 5%.
coal tar	**Solution:** 5%.
fluorouracil	**Ointment:** 5%.
□ podophyllum resin	**Solution:** 10% to 25%.
salicylic acid	**Solution:** 5%.
urea	**Cream or ointment:** 5%; 10%.
13.5 Scabicides and pediculicides	
□ benzyl benzoate [a]	**Lotion:** 25%. [a] >2 years.
permethrin	**Cream:** 5%. **Lotion:** 1%.
14. DIAGNOSTIC AGENTS	
14.1 Ophthalmic medicines	
fluorescein	**Eye drops:** 1% (sodium salt).
□ tropicamide	**Eye drops:** 0.5%.
14.2 Radiocontrast media	
□ amidotrizoate	**Injection:** 140 mg to 420 mg iodine (as sodium **or** meglumine salt)/ mL in 20- mL ampoule.
barium sulfate	**Aqueous suspension.**
□ iohexol	**Injection:** 140 mg to 350 mg iodine/ mL in 5- mL; 10- mL; 20- mL ampoules.

Complementary List	
barium sulfate **[c]**	***Aqueous suspension.***
□ *meglumine iotroxate*	***Solution:*** *5 g to 8 g iodine in 100 mL to 250 mL.*
15. DISINFECTANTS AND ANTISEPTICS	
15.1 Antiseptics	
□ chlorhexidine	**Solution:** 5% (digluconate).
□ ethanol	**Solution:** 70% (denatured).
□ povidone iodine	**Solution:** 10% (equivalent to 1% available iodine).
15.2 Disinfectants	
alcohol based hand rub	**Solution** containing ethanol 80% volume /volume **Solution** containing isopropyl alcohol 75% volume/volume
□ chlorine base compound	**Powder:** (0.1% available chlorine) for solution.
□ chloroxylenol	**Solution:** 4.8%.
glutaral	**Solution:** 2%.
16. DIURETICS	
amiloride	**Tablet:** 5 mg (hydrochloride).
□ furosemide	**Injection:** 10 mg/ mL in 2- mL ampoule. **Oral liquid:** 20 mg/5 mL **[c]**. **Tablet:** 10 mg **[c]**; 20 mg **[c]**; 40 mg.
□ hydrochlorothiazide	**Solid oral dosage form:** 25 mg.
mannitol	**Injectable solution:** 10%; 20%.
spironolactone	**Tablet:** 25 mg.
Complementary List **[c]**	
□ *hydrochlorothiazide*	***Tablet (scored):*** *25 mg.*
mannitol	***Injectable solution:*** *10%; 20%.*
spironolactone	***Oral liquid:*** *5 mg/5 mL; 10 mg/5 mL; 25 mg/5 mL.* ***Tablet:*** *25 mg.*
17. GASTROINTESTINAL MEDICINES	
Complementary List **[c]**	
□ *pancreatic enzymes*	*Age-appropriate formulations and doses including lipase, protease and amylase.*
17.1 Antiulcer medicines	

□ omeprazole	**Powder for injection:** 40 mg in vial **Powder for oral liquid:** 20 mg; 40 mg sachets. **Solid oral dosage form:** 10 mg; 20 mg; 40 mg.
□ ranitidine	**Injection:** 25 mg/ mL (as hydrochloride) in 2- mL ampoule. **Oral liquid:** 75 mg/5 mL (as hydrochloride). **Tablet:** 150 mg (as hydrochloride).
17.2 Antiemetic medicines	
dexamethasone	**Injection:** 4 mg/ mL in 1- mL ampoule (as disodium phosphate salt). **Oral liquid:** 0.5 mg/5 mL; 2 mg/5 mL. **Solid oral dosage form:** 0.5 mg; 0.75 mg; 1.5 mg; 4 mg.
metoclopramide a	**Injection:** 5 mg (hydrochloride)/ mL in 2- mL ampoule. **Oral liquid:** 5 mg/5 mL **[c]**. **Tablet:** 10 mg (hydrochloride). a Not in neonates.
ondansetron a	**Injection:** 2 mg base/ mL in 2- mL ampoule (as hydrochloride). **Oral liquid:** 4 mg base/5 mL. **Solid oral dosage form:** Eq 4 mg base; Eq 8 mg base; Eq 24 mg base. a >1 month.
17.3 Anti-inflammatory medicines	
□ sulfasalazine	**Retention enema.** **Suppository:** 500 mg. **Tablet:** 500 mg.
Complementary List	
□ *hydrocortisone*	***Retention enema.*** ***Suppository:*** *25 mg (acetate).* (the □ only applies to hydrocortisone retention enema).
17.4 Laxatives	
□ senna	**Tablet:** 7.5 mg (sennosides) (or traditional dosage forms).
17.5 Medicines used in diarrhoea	

17.5.1 Oral rehydration	
oral rehydration salts	**Powder for dilution** in 200 mL; 500 mL; 1 L. glucose: 75 mEq sodium: 75 mEq **or** mmol/L chloride: 65 mEq **or** mmol/L potassium: 20 mEq **or** mmol/L citrate: 10 mmol/L osmolarity: 245 mOsm/L glucose: 13.5 g/L sodium chloride: 2.6 g/L potassium chloride: 1.5 g/L trisodium citrate dihydrate*: 2.9 g/L *trisodium citrate dihydrate may be replaced by sodium hydrogen carbonate (sodium bicarbonate) 2.5 g/L. However, as the stability of this latter formulation is very poor under tropical conditions, it is recommended only when manufactured for immediate use.
17.5.2 Medicines for diarrhoea	
zinc sulfate*	**Solid oral dosage form:** 20 mg. * In acute diarrhoea zinc sulfate should be used as an adjunct to oral rehydration salts.
18. HORMONES, OTHER ENDOCRINE MEDICINES AND CONTRACEPTIVES	
18.1 Adrenal hormones and synthetic substitutes	
fludrocortisone	**Tablet:** 100 micrograms (acetate).
hydrocortisone	**Tablet:** 5 mg; 10 mg; 20 mg.
18.2 Androgens	
Complementary List	
testosterone	***Injection:*** *200 mg (enanthate) in 1- mL ampoule.*
18.3 Contraceptives	
18.3.1 Oral hormonal contraceptives	
□ ethinylestradiol + □ levonorgestrel	**Tablet:** 30 micrograms + 150 micrograms.
□ ethinylestradiol + □ norethisterone	**Tablet:** 35 micrograms + 1 mg.
levonorgestrel	**Tablet:** 30 micrograms; 750 micrograms (pack of two); 1.5 mg.

18.3.2 Injectable hormonal contraceptives	
estradiol cypionate + medroxyprogesterone acetate	**Injection:** 5 mg + 25 mg.
medroxyprogesterone acetate	**Depot injection:** 150 mg/ mL in 1- mL vial.
norethisterone enantate	**Oily solution:** 200 mg/ mL in 1- mL ampoule.
18.3.3 Intrauterine devices	
copper-containing device	
levonorgestrel-releasing intrauterine system	Intrauterine system with reservoir containing 52 mg of levonorestrel
18.3.4 Barrier methods	
condoms	
diaphragms	
18.3.5 Implantable contraceptives	
etonogestrel-releasing implant	Single-rod etonogestrel-releasing implant, containing 68 mg of etonogestrel.
levonorgestrel-releasing implant	Two-rod levonorgestrel-releasing implant, each rod containing 75 mg of levonorgestrel (150 mg total).
18.3.6 Intravaginal contraceptives	
progesterone vaginal ring*	Progesterone-releasing vaginal ring containing 2.074 g of micronized progesterone. *For use in women actively breastfeeding at least 4 times per day
18.4 Estrogens	
18.5 Insulins and other medicines used for diabetes	
□ gliclazide*	**Solid oral dosage form:** (controlled-release tablets) 30 mg; 60 mg; 80 mg. * glibenclamide not suitable above 60 years.
glucagon	**Injection:** 1 mg/ mL.
insulin injection (soluble)	**Injection:** 40 IU/ mL in 10- mL vial; 100 IU/ mL in 10- mL vial.
intermediate-acting insulin	**Injection:** 40 IU/ mL in 10- mL vial; 100 IU/ mL in 10- mL vial (as compound insulin zinc suspension **or** isophane insulin).
metformin	**Tablet:** 500 mg (hydrochloride).
Complementary List ***[c]***	
metformin	***Tablet:*** *500 mg (hydrochloride).*

18.6 Ovulation inducers	
Complementary List	
clomifene	***Tablet:** 50 mg (citrate).*
18.7 Progestogens	
□ medroxyprogesterone acetate	**Tablet:** 5 mg.
18.8 Thyroid hormones and antithyroid medicines	
levothyroxine	**Tablet:** 25 micrograms **[c]**; 50 micrograms; 100 micrograms (sodium salt).
potassium iodide	**Tablet:** 60 mg.
□ propylthiouracil	**Tablet:** 50 mg.
*Complementary List **[c]***	
Lugol's solution	***Oral liquid:** about 130 mg total iodine/ mL.*
potassium iodide	***Tablet:** 60 mg.*
propylthiouracil	***Tablet:** 50 mg.*
19. IMMUNOLOGICALS	
19.1 Diagnostic agents	
All tuberculins should comply with the WHO requirements for tuberculins.	
tuberculin, purified protein derivative (PPD)	**Injection.**
19.2 Sera and immunoglobulins	
All plasma fractions should comply with the WHO requirements.	
Anti-venom immunoglobulin*	**Injection.** * Exact type to be defined locally.
diphtheria antitoxin	**Injection:** 10 000 IU; 20 000 IU in vial.

19.3 Vaccines	
WHO immunization policy recommendations are published in vaccine position papers on the basis of recommendations made by the Strategic Advisory Group of Experts on Immunization (SAGE). WHO vaccine position papers are updated three to four times per year. The list below details the vaccines for which there is a recommendation from SAGE and a corresponding WHO position paper as at **27 February 2015**. The most recent versions of the WHO position papers, reflecting the current evidence related to a specific vaccine and the related recommendations, can be accessed at any time on the WHO website at: http://www.who.int/immunization/documents/positionpapers/en/index.html. Vaccine recommendations may be universal or conditional (e.g., in certain regions, in some high-risk populations or as part of immunization programmes with certain characteristics). Details are available in the relevant position papers, and in the Summary Tables of WHO Routine Immunization Recommendations available on the WHO website at: http://www.who.int/immunization/policy/immunization_tables/en/index.html. Selection of vaccines from the Model List will need to be determined by each country after consideration of international recommendations, epidemiology and national priorities. All vaccines should comply with the WHO requirements for biological substances. WHO noted the need for vaccines used in children to be polyvalent.	
Recommendations for all	
BCG vaccine	
diphtheria vaccine	
Haemophilus influenzae type b vaccine	
hepatitis B vaccine	
HPV vaccine	
measles vaccine	
pertussis vaccine	
pneumococcal vaccine	
poliomyelitis vaccine	
rotavirus vaccine	
rubella vaccine	
tetanus vaccine	
Recommendations for certain regions	
Japanese encephalitis vaccine	
yellow fever vaccine	
tick-borne encephalitis vaccine	

Recommendations for some high-risk populations	
cholera vaccine	
hepatitis A vaccine	
meningococcal meningitis vaccine	
rabies vaccine	
typhoid vaccine	
Recommendations for immunization programmes with certain characteristics	
influenza vaccine (seasonal)	
mumps vaccine	
varicella vaccine	
20. MUSCLE RELAXANTS (PERIPHERALLY-ACTING) AND CHOLINESTERASE INHIBITORS	
□ atracurium	**Injection:** 10 mg/ mL (besylate).
neostigmine	**Injection:** 500 micrograms in 1- mL ampoule; 2.5 mg (metilsulfate) in 1- mL ampoule. **Tablet:** 15 mg (bromide).
suxamethonium	**Injection:** 50 mg (chloride)/ mL in 2- mL ampoule. **Powder for injection** (chloride), in vial.
□ vecuronium **[c]**	**Powder for injection:** 10 mg (bromide) in vial.
Complementary List	
pyridostigmine	***Injection:*** *1 mg in 1- mL ampoule.* ***Tablet:*** *60 mg (bromide).*
□ *vecuronium*	***Powder for injection:*** *10 mg (bromide) in vial.*
21. OPHTHALMOLOGICAL PREPARATIONS	
21.1 Anti-infective agents	
aciclovir	**Ointment:** 3% W/W.
azithromycin	**Solution (eye drops):** 1.5%.
□ gentamicin	**Solution (eye drops):** 0.3% (sulfate).
□ ofloxacin	**Solution (eye drops):** 0.3%.
□ tetracycline	**Eye ointment:** 1% (hydrochloride).
21.2 Anti-inflammatory agents	
□ prednisolone	**Solution (eye drops):** 0.5% (sodium phosphate).

21.3 Local anaesthetics	
☐ tetracaine [a]	**Solution (eye drops):** 0.5% (hydrochloride). [a] Not in preterm neonates.
21.4 Miotics and antiglaucoma medicines	
acetazolamide	**Tablet:** 250 mg.
latanoprost	**Solution (eye drops):** latanoprost 50 micrograms/mL
☐ pilocarpine	**Solution (eye drops):** 2%; 4% (hydrochloride **or** nitrate).
☐ timolol	**Solution (eye drops):** 0.25%; 0.5% (as hydrogen maleate).
21.5 Mydriatics	
atropine* [a]	**Solution (eye drops):** 0.1%; 0.5%; 1% (sulfate). * **[c] Or** homatropine (hydrobromide) **or** cyclopentolate (hydrochloride). [a] >3 months.
Complementary List	
epinephrine (adrenaline)	***Solution (eye drops):*** *2% (as hydrochloride).*
21.6 Anti-vascular endothelial growth factor (VEGF) preparations	
Complementary List	
bevacizumab	***Injection:*** *25 mg/ mL.*
22. OXYTOCICS AND ANTIOXYTOCICS	
22.1 Oxytocics	
☐ ergometrine	**Injection:** 200 micrograms (hydrogen maleate) in 1-mL ampoule.
misoprostol	**Tablet:** 200 micrograms. – Management of incomplete abortion and miscarriage; – Prevention and treatment of postpartum haemorrhage where oxytocin is not available or cannot be safely used **Vaginal tablet:** 25 micrograms.* * Only for use for induction of labour where appropriate facilities are available.
oxytocin	**Injection:** 10 IU in 1- mL.
Complementary List	

mifepristone – misoprostol** *Where permitted under national law and where culturally acceptable.*	***Tablet** 200 mg – **tablet** 200 micrograms.* ** Requires close medical supervision.*
22.2 Antioxytocics (tocolytics)	
nifedipine	**Immediate-release capsule:** 10 mg.
23. PERITONEAL DIALYSIS SOLUTION	
Complementary List	
intraperitoneal dialysis solution (of appropriate composition)	***Parenteral solution.***
24. MEDICINES FOR MENTAL AND BEHAVIOURAL DISORDERS	
24.1 Medicines used in psychotic disorders	
□ chlorpromazine	**Injection:** 25 mg (hydrochloride)/ mL in 2- mL ampoule. **Oral liquid:** 25 mg (hydrochloride)/5 mL. **Tablet:** 100 mg (hydrochloride).
□ fluphenazine	**Injection:** 25 mg (decanoate **or** enantate) in 1- mL ampoule.
□ haloperidol	**Injection:** 5 mg in 1- mL ampoule. **Tablet:** 2 mg; 5 mg.
risperidone	**Solid oral dosage form:** 0.25 mg to 6.0 mg.
Complementary List	
chlorpromazine **[c]**	***Injection:** 25 mg (hydrochloride)/ mL in 2- mL ampoule.* ***Oral liquid:** 25 mg (hydrochloride)/5 mL.* ***Tablet:** 10 mg; 25 mg; 50 mg; 100 mg (hydrochloride).*
clozapine	***Solid oral dosage form:** 25 to 200 mg.*
haloperidol **[c]**	***Injection:** 5 mg in 1- mL ampoule.* ***Oral liquid:** 2 mg/ mL.* ***Solid oral dosage form:** 0.5 mg; 2 mg; 5 mg.*

24.2 Medicines used in mood disorders	
24.2.1 Medicines used in depressive disorders	
□ amitriptyline	**Tablet:** 25 mg; 75mg. (hydrochloride).
fluoxetine	**Solid oral dosage form:** 20 mg (as hydrochloride).
Complementary List **[c]**	
fluoxetine a	***Solid oral dosage form:*** *20 mg (as hydrochloride).* a >8 years.
24.2.2 Medicines used in bipolar disorders	
carbamazepine	**Tablet (scored):** 100 mg; 200 mg.
lithium carbonate	**Solid oral dosage form:** 300 mg.
valproic acid (sodium valproate)	**Tablet (enteric-coated):** 200 mg; 500 mg (sodium valproate).
24.3 Medicines for anxiety disorders	
□ diazepam	**Tablet (scored):** 2 mg; 5 mg.
24.4 Medicines used for obsessive compulsive disorders	
clomipramine	**Capsule:** 10 mg; 25 mg (hydrochloride).
24.5 Medicines for disorders due to psychoactive substance use	
nicotine replacement therapy (NRT)	**Chewing gum:** 2 mg; 4 mg (as polacrilex). **Transdermal patch:** 5 mg to 30 mg/16 hrs; 7 mg to 21 mg/24 hrs.
Complementary List	
□ *methadone**	***Concentrate for oral liquid:*** *5 mg/ mL; 10 mg/ mL (hydrochloride).* ***Oral liquid:*** *5 mg/5 mL; 10 mg/5 mL (hydrochloride).* ** The square box is added to include buprenorphine. The medicines should only be used within an established support programme.*
25. MEDICINES ACTING ON THE RESPIRATORY TRACT	
25.1 Antiasthmatic and medicines for chronic obstructive pulmonary disease	
□ beclometasone	**Inhalation (aerosol):** 50 micrograms (dipropionate) per dose; 100 micrograms (dipropionate) per dose (as CFC free forms).
□ budesonide **[c]**	**Inhalation (aerosol):** 100 micrograms per dose; 200 micrograms per dose.
epinephrine (adrenaline)	**Injection:** 1 mg (as hydrochloride **or** hydrogen tartrate) in 1- mL ampoule.
ipratropium bromide	**Inhalation (aerosol):** 20 micrograms/metered dose.

□ salbutamol	**Inhalation (aerosol):** 100 micrograms (as sulfate) per dose. **Injection:** 50 micrograms (as sulfate)/ mL in 5- mL ampoule. **Metered dose inhaler (aerosol):** 100 micrograms (as sulfate) per dose. **Respirator solution for use in nebulizers:** 5 mg (as sulfate)/ mL.
26. SOLUTIONS CORRECTING WATER, ELECTROLYTE AND ACID–BASE DISTURBANCES	
26.1 Oral	
oral rehydration salts	See section 17.5.1.
potassium chloride	**Powder for solution.**
26.2 Parenteral	
glucose	**Injectable solution:** 5% (isotonic); 10% (hypertonic); 50% (hypertonic).
glucose with sodium chloride	**Injectable solution:** 4% glucose, 0.18% sodium chloride (equivalent to Na+ 30 mmol/L, Cl- 30 mmol/L). **Injectable solution:** 5% glucose, 0.9% sodium chloride (equivalent to Na+ 150 mmol/L and Cl- 150 mmol/L); 5% glucose, 0.45% sodium chloride (equivalent to Na+ 75 mmol/L and Cl- 75 mmol/L) **[c]**.
potassium chloride	**Solution:** 11.2% in 20- mL ampoule (equivalent to K+ 1.5 mmol/ mL, Cl- 1.5 mmol/ mL). **Solution for dilution:** 7.5% (equivalent to K 1 mmol/ mL and Cl 1 mmol/ mL) **[c]**; 15% (equivalent to K 2 mmol/ mL and Cl 2 mmol/ mL) **[c]**.
sodium chloride	**Injectable solution:** 0.9% isotonic (equivalent to Na+ 154 mmol/L, Cl- 154 mmol/L).
sodium hydrogen carbonate	**Injectable solution:** 1.4% isotonic (equivalent to Na+ 167 mmol/L, HCO_3- 167 mmol/L). **Solution:** 8.4% in 10- mL ampoule (equivalent to Na+ 1000 mmol/L, HCO_3-1000 mmol/L).
□ sodium lactate, compound solution	**Injectable solution.**
26.3 Miscellaneous	
water for injection	2- mL; 5- mL; 10- mL ampoules.

27. VITAMINS AND MINERALS	
ascorbic acid	**Tablet:** 50 mg.
calcium	**Tablet:** 500 mg (elemental).
cholecalciferol* **[c]**	**Oral liquid:** 400 IU/ mL. **Solid oral dosage form:** 400 IU; 1000 IU. * Ergocalciferol can be used as an alternative.
☐ ergocalciferol	**Oral liquid:** 250 micrograms/ mL (10 000 IU/ mL). **Solid oral dosage form:** 1.25 mg (50 000 IU).
iodine	**Capsule:** 200 mg. **Iodized oil:** 1 mL (480 mg iodine); 0.5 mL (240 mg iodine) in ampoule (oral **or** injectable); 0.57 mL (308 mg iodine) in dispenser bottle.
☐ nicotinamide	**Tablet:** 50 mg.
pyridoxine	**Tablet:** 25 mg (hydrochloride).
retinol	**Capsule:** 50 000 IU; 100 000 IU; 200 000 IU (as palmitate). **Oral oily solution:** 100 000 IU (as palmitate)/ mL in multidose dispenser. **Tablet (sugar-coated):** 10 000 IU (as palmitate). **Water-miscible injection:** 100 000 IU (as palmitate) in 2- mL ampoule.
riboflavin	**Tablet:** 5 mg.
sodium fluoride	In any appropriate topical formulation.
thiamine	**Tablet:** 50 mg (hydrochloride).
Complementary List	
calcium gluconate	***Injection:*** *100 mg/ mL in 10- mL ampoule.*
28. EAR, NOSE AND THROAT MEDICINES [c]	
acetic acid	**Topical:** 2%, in alcohol.
☐ budesonide	**Nasal spray:** 100 micrograms per dose.
☐ ciprofloxacin	**Topical:** 0.3% drops (as hydrochloride).
☐ xylometazoline [a]	**Nasal spray:** 0.05%. [a] Not in children less than 3 months.

29. SPECIFIC MEDICINES FOR NEONATAL CARE	
29.1 Medicines administered to the neonate [c]	
caffeine citrate	**Injection:** 20 mg/ mL (equivalent to 10 mg caffeine base/ mL). **Oral liquid:** 20 mg/ mL (equivalent to 10 mg caffeine base/ mL).
Chlorhexidine	**Solution or gel:** 7.1% (digluconate) delivering 4% chlorhexidine (for umbilical cord care) **[c]**.
Complementary List	
☐ *ibuprofen*	***Solution for injection***: 5 mg/ mL.
☐ *prostaglandin E*	***Solution for injection:*** ***Prostaglandin E1:*** 0.5 mg/ mL in alcohol. ***Prostaglandin E 2:*** 1 mg/ mL.
surfactant	***Suspension for intratracheal instillation:*** *25 mg/ mL **or** 80 mg/ mL.*
29.2 Medicines administered to the mother	
dexamethasone	**Injection:** 4 mg/ mL dexamethasone phosphate (as disodium salt)
30. MEDICINES FOR DISEASES OF JOINTS	
30.1 Medicines used to treat gout	
allopurinol	**Tablet:** 100 mg.
30.2 Disease-modifying agents used in rheumatoid disorders (DMARDs)	
chloroquine	**Tablet:** 100 mg; 150 mg (as phosphate **or** sulfate).
Complementary List	
azathioprine	***Tablet:*** *50 mg.*
hydroxychloroquine **[c]**	***Solid oral dosage form:*** *200 mg (as sulfate).*
methotrexate	***Tablet:*** *2.5 mg (as sodium salt).*
penicillamine	***Solid oral dosage form:*** *250 mg.*
sulfasalazine	***Tablet:*** *500 mg.*
30.3 Juvenile joint diseases	
acetylsalicylic acid (acute or chronic use)*	***Suppository: 50 mg to 150 mg.*** ***Tablet: 100 mg to 500 mg.*** **** For use for rheumatic fever, juvenile arthritis, Kawasaki disease.***

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